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KEEPERS OF THE FLAME

By BURT B. STONE

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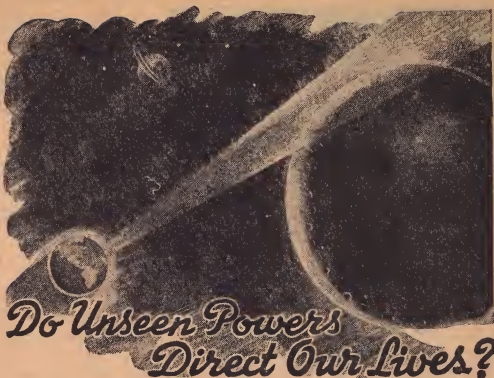
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MAY 1949

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Front cover painting by Robert Gibson Jones, illustrating
a scene from "The Keepers of the Flame."

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The Editor's Notebook

A CONFIDENTIAL CHAT WITH THE EDITOR

WE FEEL kind of modest this month, so we're not going to start off the editorial by saying that this issue of FA is swell. Nope. Matter of fact, we're going to say—it's terrific! There. We said it and we're glad. And what's more—you'll agree with us by the time you finish reading the last word on the last page. But in the meantime we'll sneak preview the contents page.

FIRST off we'd like to say just a word about this month's cover. As you'll have noted, Bob Jones is hack. And as usual, Bob turned in a beautiful job. A fan dropped in the other day, and while discussing the FA covers, he said: "The Boh Jones covers just make me drool!" Well, we guess he put it pretty much the way we feel too. So let's all drool together!

THE story around which the cover was painted is "The Keepers of the Flame," by a writer new to our pages, Burt B. Stone. But after you finish reading Mr. Stone's first story for your favorite magazine, you'll start asking yourself (and us) just what Burt's been hiding all this time! The story's got plenty of action, adventure, and spine-tingling suspense. Add to that a terrific fantasy hack-ground and you've got a first-rate story. So we'll leave it up to you now. Sit back and enjoy yourself.

EVER popular Lee Francis returns this month with a new novelette, "Midgits and Mighty Men." As you've noted in the past, Lee can always be depended upon to write a really unusual yarn. This new one is no exception. It's the story of a strange plague that suddenly gripped a city. A plague that turned normal men into grotesque monstrosities. That's where the story starts, and that's all we're going to tell you about here. What happened when a newspaperman decided to solve the mystery of the plague is what makes a top-notch piece of reading pleasure for your enjoyment.

STORIES of magic lamps, the Aladdin variety, are no novelty. And knowing that, and wanting to present you readers only with really unusual stories, we were somewhat skeptical when Alex Blade walked in recently and said he was writing a short fantasy around a magic lamp. Well, we sat back and waited for the story instead of telling

Alex not to write it, because we know (as you readers too) from past experience that Alex is one writer who can take an ordinary theme and really put a twist to it.

SO WE waited. And then a few days later Alex walked in with "Lamp of No Light." We sat back and read the story, still skeptical. What did we think after we finished it? You'll find the answer on page 70 of this issue. We thought it! We really think you'll get a kick out of this short story and applaud a neat bit of Blade writing. (Hey, we made something of a pun there—Blade as in sharp! Who says we're not original?)

HAVE you ever stopped and wondered at things that happen around you—that possibly they may occur because of some "manipulation" of heings more intelligent than we are? Even that our universe may be but a grain of sand in the cosmic scheme of things? Well if you haven't, get set to start thinking right now along those lines. For when you read R. K. Dirks' new story, "On the Back of a Beetle" you'll get the surprise of your life. That's all we'll say right here. We wouldn't want to spoil a swell yarn for you. Fair enough?

PETER WORTH presents our time travel story this month. The real science-fiction variety. The title, "I Died Tomorrow" will give you a good idea of what you may expect. But don't be surprised if you're surprised when you get to the end of the story! We were, and we might add, pleasantly so.

FINISHING up the issue is Charles Raçour's new interplanetary yarn, "Survivors in Space." Chuck used a neat angle as the basis for this new yarn. He projected the idea that one of the greatest risks a spaceman would face would be the danger of becoming lost in the void. Imagine yourself somewhere in the outer reaches of the solar system—but you didn't know just where! Well that's what happened in the story Chuck projected. Exactly what the final outcome was you'll find out when you read the story.

WHICH winds up shop for this month. Next month we'll present the great new Phillips novel that we mentioned last issue. It's really something worth waiting for! See you then. WLH

The Temple of Benares



By Carter T. Wainwright



THE Hindus have made great contributions to mathematics, the most notable of which was the invention of zero. This single step, the idea of *place* notation in calculating, was a truly wonderful idea, making possible as it does, the writing of gigantic numbers with comparatively small symbols. But the Hindus weren't content with just such a profound invention. They made many others in the field of mathematics.

One of their favorite pastimes was the invention of problems as exercises. These problems are usually tinged with mythological or theological significance and in a way they are poetic in conception.

Consider the legend of old King Shirham. This noble king wanted to reward his grand visier, Sissa Ben Dahir, for inventing the game of chess. Chess was so highly revered in India that many stories revolve around it, this being the most famous. King Shirham offered Sissa anything he wanted. The king was much surprised when Sissa made a relatively modest demand. The visier asked that he be given one grain of wheat for the first square on the chess board, two grains of wheat for the second square, four grains for the third square and so on, doubling the quantity on each preceding square. And he wanted this done for all sixty-four squares.

But to the king's astonishment, when he attempted this supposedly modest undertaking, he found he could not possibly fulfill it.

For, if you calculate the results you will make the astonishing discovery that such a procedure would require this number of grains exactly—18,446,744,073,709,551,615—or more than 18 *quintillions* of grains!

Ball tells the famous story of the Temple of Benares which involves a similar fantastic figure stemming from an apparently simple and trivial problem.

According to the story, in the huge temple of Benares, which is supposedly located in the center of the world, is a brass plate to which are attached three needles made of diamonds. These needles are supposedly about twenty inches long and a quarter of an inch in diameter.

On one of the needles at the beginning of time, the great God placed sixty-four discs of gold, the largest disc being at the bottom of the pile and the rest decreasing in diameter as the pile rose. Presumably this is the tower of Brahma.

Stationed in the temple is a priest who works unceasingly from morning until night and whose function is to transfer the gold discs from the original diamond needle to one of the other two.

But he must do this in accordance with the unchanging laws of Brahma which command him to change the discs, one at a time, and never must there be a larger disc on top of a smaller one. And when he has accomplished this Herculean task, the whole world will vanish in a puff of thunder and lightning.

Now, when you examine this problem, you will almost certainly see that there is a general rule for performing the operation. A little closer observation will show that each subsequent removal of a disc requires two times as many moves as the preceding disc. If this problem is to be solved for the sixty-four discs, it is obvious that something very similar to the chessboard problem is going to take place. In fact, the identical thing occurs. The number of moves necessary to transfer the discs turns out to be the same as the number of grains of wheat in the chessboard problem!

If one move per second could be made unceasingly day and night, then it would take 58 trillion years to finish the job! The priest in the Temple at Benares will become mighty tired before the job is finished.

The problem of the Temple of Benares is modified somewhat and sold in the stores as a toy. Possibly you have played with it at one time or another because it is a perennial plaything that can be found almost any year.

But, in this toy, there is a distinction. For one thing, the number of discs rarely exceeds seven—and even here one hundred and twenty-seven moves are required—that is, two to the seventh power, minus one. With six discs, sixty-three moves are required. These are, at least, a little more reasonable! The other difference between these games and the real game in the Temple of Benares, is that the discs are not made of gold nor the needles of diamonds!

It might be added here, that without the zero notation invented by the fertile minds of these people, it would be almost impossible to write such huge numbers with any ease.

Zero notation is clearly a profound and simple invention at the same time. Mathematicians have often wondered why it didn't occur to other peoples than the Hindus. The Greeks, for example, with their great deductive powers, should have developed some workable system. But they did not.

In recent years, a few Hindu mathematicians have made some great contributions to modern science, and there was one unrecognized genius who died recently without making any impression on the world until his death.



THE KEEPERS OF THE FLAME

By BURT B. STONE

**The bravest warriors trembled in
fear of the Masked People—for it was
they who guarded the *flame's* secret . . .**

NEW superlatives had been invented for Faith Wayne; when she won the title of the "Most Glamorous Woman," the whole newspaper, radio, and movie world each outdid the other in descriptive phrases of her charms.

She had become world famous the day the contest judges called her what they did. And deservedly so. For there wasn't the slightest doubt of her beauty or charm. Her raven hair had set hearts aflame, and as for



Faith Wayne cried out in sudden fear as the hideous creature rushed toward her . . .

the rest of that fabulous figure and face, it was said that the most famous director in Hollywood had said he would give up his career and retire to a monastery if he couldn't sign her to a contract.

But that was three years ago.

Now she lay on an operating table in the home of Quentin Pais, her arms and legs strapped firmly to the table, a set of electrodes on her temples and another set clamped firmly to the soles of her feet. Around her left hand a black plastic covering for the tiny cables covered her from her wrist to elbow. The wires left their hiding place and ran along the edge of the table and down one leg and along the floor to the Omegatron concealed behind the five-foot thickness of sheet lead which was the barrier against the deadly Omega-X rays which would emanate from her body once the Omegatron was set to work.

Set firmly against the table on which Faith Wayne was lying, was another table. Dr. Homer, his head, soles and left hand holding the same electrodes and plastic covering, lay on this table. No superlatives of any kind had been spoken in his praise or honor. He was as close to being the ordinary man as was possible for Quentin Pais to get hold of. There was a single connecting link between these two people.

Each had an incurable tumor of the brain.

In Faith Wayne's case it had been discovered three years before, on the very night of her debut before a television audience. She had already been adjudged the winner of the contest. Her feet were being set on the path to fame and fortune that fatal night. Ten million people were going to see the face and figure of this most glamorous woman. And at the last second a stand-in had to be called to take her place.

As Faith lay on the table she suddenly found herself thinking back on

that night. . . .

. . . Jerry Mangin, her manager, had called at her studio apartment. In one arm lay a huge bundle of flowers, and his free hand held an immense sheaf of telegrams.

"Baby!" he shouted hoarsely as he entered. "Look! Flowers for you! From Gordie Hughes, the big gun on Video Incorporated. And take a gander at all these wires. Just about everybody who's anybody, wishing you luck— Hey! What's wrong?"

SHE remembered awakening with a headache, but thought it was from the excitement of appearing on the show. She had taken an aspirin and then another, thinking the headache was but temporary. It had persisted, however, through the morning and early noon. And now, as Jerry had entered with his announcement, it seemed as if her head was about to split. She had tried to smile but the effort was too much, and she felt suddenly drained of all strength. The needlepoint of pain beating at her brain was penetrating deeper and deeper. The room swam before her eyes, and the short thin figure of Jerry assumed oddly elongated proportions, and developed strange shapes. She tried to smile, she remembered, and like a curtain which had suddenly been shoved across her vision, all was dark.

Jerry had called a physician immediately. It was the first of many she was to see. The first was a general practitioner, all the rest, specialists of one sort or another, but having one thing in common, diseases of the brain. And after two and a half years of seeing them, having taken every test available, their decision, singly and severally, was an operation. And all this time the pain had never left her.

So they operated, and sewed her head

back together again.

"... About six months!" said the world-renowned surgeon who had done the operating, to her demand on what she could expect of life. "It's too deep, too strongly imbedded. Six months or tomorrow, no one can tell. But the end will come quickly, Miss Wayne . . ."

It had been some consolation, that she would not suffer. A tiny kernel of dissolution, something no larger than the head of a pin, had formed in the recesses of her brain, had formed and grown, until by the time of the operation it had grown to the size of a large walnut. And in six months at the most, that walnut-sized terror would have accomplished its mission.

Faith Wayne would be dead. And so would Don Homer. Their medical histories were startlingly and strikingly familiar, though in all other respects their lives were dissimilar. At about the same time Faith had become troubled with her headaches, Don had also. There was a difference, however. Don and later, those who examined him, had a pretty definite idea how his began. After three years of trying to make his college football team, Don Homer made it in his senior year.

He had played with some measure of success all through the season, mostly as a substitute. Then came the last game and on the first play the regular tackle for whose position Don was a sub, broke his arm in making a tackle. Don had taken his place and had played a bang-up game. It had been that literally. It seemed as if the entire opposing line had decided to take picks on him. The worst had been on a line play he had stopped. His helmet had been torn from his head and someone had kicked him behind his left ear. The blow had knocked him unconscious temporarily, but after a moment he was able to play again. That kick had put

the pin-size tumor in his brain.

And Don had gone to the same brain man Faith had, had had done to him the same operation, and had been told the same thing Faith had. And on the same day as Faith, Don had received the letter from Quentin Pais, asking him to come to Pais' residence.

DON had met Faith for the first time as he stepped from the cab which had brought him to Pais' home. Faith was standing before the huge wrought-iron gate which was the entrance to Pais' home. He joined her there and while she looked at the gate, he looked at her and wondered who this wondrous creature could be. Then a dark-suited man came to the gate, unlocked it and said:

"Miss Wayne, Mr. Homer . . . ?"

At the acknowledgment of their names he had gestured for them to follow, leading them up the winding path to the three story grey-stone house. Quentin Pais had greeted them in person, at the threshold.

He ushered them into the immense drawing room on the main floor, made them comfortable and came right to the point. He had gotten their case histories from Doctor Newburg, the surgeon, and after certain investigation had decided to approach them. As for the unsigned check which had accompanied the letter, he would sign it if they were to fall in with his plan. Further, the hundred thousand dollars to which it had been made out could be used for any purpose they desired.

The immensity of the sum they had at their disposal made them dumb. They could only shake their heads. Then he told them of his purpose. Boiled down to a few words it came to this. He had come across an ancient formula for the transmutation of matter and with the aid of modern science

had done what the ancients had failed to, sent animal matter into the unknown. And made it return in its original form. But nothing human, only animals. And in conclusion, Pais said:

"... Literally you will become dust, and as dust you will return. The catalyst which will bring you back to human form is the Omegatron, an instrument of my own invention. I sought two out, a man and a woman, for I don't know into what strange land or place you will resolve yourselves. So I sought the most beautiful woman in the world as our female representative and the most ordinary man as our male.

"The task was difficult because surely the most beautiful woman had more reason to live than any other. As for the most ordinary man, he, because of his nature, would be just as unwilling. It was fortunate that I heard about you two from Newburg. I know all about the operations you have had and results thereof. You were each told six months at the outside, tomorrow or even now, at the earliest. . . ."

The two had looked at each other in wonder, then turned their attention back to the tall, handsome man whose face held an etched, cameo-like beauty. His voice, soothing as an unguent, then told them of the greatness of their task, of the far-reaching good it could do, and asked, finally, whether they would cooperate. They agreed.

They were asked to move their personal belongings to his residence, told to keep what they were doing a secret. And after a week, Pais, whom they'd seen very little of after their arrival, came and told them all was in readiness.

And so Faith Wayne, the most glamorous woman in the world, and Don Homer, the most ordinary man, lay on twin operating tables, his feet toward hers, and waited for the hum of the elec-

tric current. While behind the lead screen Quentin Pais and his assistant made sure all was in working order.

QUENTIN PAIS' voice could not be heard by the two on the tables. "Tell me, Doctor Raven," he asked, "what do you think of my plan?"

Raven, a slender man of middling height, whose aquiline face yellowed as ancient parchment showed nothing of his thoughts, didn't turn from his perusal of the complex meter which measured in wondrous exactness the amount of Omega-X rays sent from the Omegatron.

"Pais," he said in carefully modulated tones, "I think you're mad. But then I've always told you so. 'Too much money, too much genius. A quite inharmonious blend. You could have picked any bum from the streets. Any woman would have done. . . .'"

Pais gave the stooped figure a side-long grin. "To any one but myself," he said. "But the ordinary woman would not do for my mate in that world to which I am sending them—"

Raven straightened and still without looking, said, "And what about Don Homer? Why did you choose him? Because your conquest of the woman might be made easier by comparison with the ordinary charms of the male?"

"A fillip to my vanity," Pais replied. "The most difficult mind to cope with can be the ordinary. That mind can plot a course easy to follow, and suddenly, for no explicable reason, change course. The simple man is the hardest to follow."

"And the girl," Raven continued. "Do not forget. She too, is ordinary. . . ."

"Bah!" there was utter scorn in Pais' voice. "She is a woman. Vain, unscrupulous, unreasoning, given to following her emotions. I will twist her to my lead. Raven! Tell me. What

strange thought just crossed your mind?"

A sliver of fear pierced the brain of the other. There were times when Quentin Pais seemed to have supernatural powers. Like now. Raven's face became more yellow than was its wont, as he replied:

"I was thinking how simple it would be to make your stay in the place where you will find yourself, permanent. A twist of this dial, and forever a prisoner. . . ."

"Delusions, my dear Raven!" Pais broke in. "And you are only too well aware of it. A week is the time I have given us there. My attorney has instructions to open the deposit box in my vault after that. We know you wouldn't want that, don't we?"

Raven nodded and suddenly bent closer to the dial again. Pais smiled wider and continued, "On the other hand you have my word. Your discovery of a cancer cure will be given to the world, on my return. And a million dollars for a private hospital. Undying fame and a future the envy of every practitioner. You have everything to lose, should I *not* return."

"Everything is in readiness," Raven's voice was once more blank as he straightened.

"Keep it in mind," Pais said as he started to disrobe. "The electric chair has a seat to fit every shape. Even yours, Raven. What you did was murder in the eyes of the world. And the world will try you. You should never have signed that paper—Ah, well. A week won't be long to wait. . . ."

FAITH WAYNE felt no discomfort.

In fact she felt nothing. For the first time in a very long while there was no pain. It was good to feel this nothingness. Though she couldn't see him she knew Don lay on the table

ahead. A nice chap, she thought. Nothing extraordinary about the guy, but pleasant to be with and talk to. He seemed to know when to stop listening and begin talking.

She could hear nothing, feel nothing, but she could see. A figure crossed her line of vision. It was Quentin Pais and he was dressed in the same sort of garments Don had been given. It was a one-piece, tight-fitting thing, like a pair of old-fashioned suit of underwear. And like Don, Pais had a sword strapped to his side. Then Doctor Raven passed before her eyes and she saw he was wheeling an operating table before him. She could not move her head so could not see what they did with the table. But whatever they did had to do with Pais because Raven returned alone. There was silence for a while then, to be broken by the hum of the generator starting. The hum increased in volume. And as it increased Faith felt its results.

A feeling as if she was afloat possessed her. Her body had no weight. A wondrous array of colors paraded before her eyes. At first they came singly, then they wove a pattern that was the most beautiful thing she had ever seen. And she became part of the pattern. They merged with a suddenness that was startling. And now she was no longer attached to the bed. She was afloat completely. And as the hum increased she floated higher and higher. *The hum became a whine, a suddenly unbearable sound—and for the first time the pain came back, pain too intense to bear, too intense—too intense—too intense. . . .*

There seemed to be such a weight bearing him down. If he could only summon enough strength Tar-Don knew he could lift it. Then he opened his eyes. He was in some sort of forest. All about him were trees and shrubbery, thick and green and high. Through the

topmost branches, Don caught a glimpse of blue sky.

Tar-Don moved and every bone seemed to feel the act. There was a crackling sound, brittle as a twig's breaking, and a groan was forced to his lips. But the feeling of pain was only momentary. It passed and Tar-Don sat erect. Suddenly he came to a realization of where he was and like a flash he was on his feet, the sword whipping shrilly from its sheath ready for instant action.

The blade held low in front of him, Tar-Don backed cautiously from the glen toward the protection of the brush. Ho-Gan and the squad of twenty he had with him could not be too far off. But even as he backed toward the bushes he wondered how it had come he had fallen asleep. Yet he couldn't remember falling asleep. And like a clap of thunder another memory came.

There was the strange woman he had seen. It was the last thing he actually remembered. There was this woman—ah! It came back quite clearly now. There had been two of them. This woman and the tall man with the lean saturnine face. They had been struggling as he came on the scene and he and the stranger had fought. He had tripped, fallen, and that was all.

He wondered idly what had happened to the two. She was the most beautiful woman he had ever seen. Tall and graceful, the one-piece garment hiding and revealing at the same time the most beautiful body he had ever seen. And her face; eyes like limpid pools into which a man could lose himself, lips for the taste of which he knew he could kill, and a skin the color for which he had no comparison.

Then there was a rustling sound behind him and he whirled.

"Stay!" came the command in a hoarse voice. "We have you. . . ."

EVEN as he had whirled Tar-Don knew he had backed in the wrong direction. They had come from behind him. He was trapped. For he could hear the direction of their bodies coming at him from the opposite side. He bit his lips, then grinned widely. He knew Ho-Gan and the rest. They had been told to bring him alive or dead. And dead would be the best way. Well, then he might as well do it for as high a price as possible.

Ho-Gan, his wide, squat body blocking the entrance to the glade, advanced on slow, sure feet, the long sword held full in front of him. At his side and behind him were the ten men he had chosen to come from this side. Antilla and the others were now closing in from the opposite side. It had been a long chase and a hard one. Tar-Don was a fool, but a brave one. And he had the best and sharpest sword in all Omeg.

"Tar-Don!" Ho-Gan called sharply. "Dead you can do nothing. Surrender. It is best."

"Hah!" Tar-Don's voice held a rich scorn of such tricks. "Surrender . . . So your butcher can use my meat? Better dead meat!"

"Dead meat stinks and is fit for nothing but the carrion birds that fly above the arena," Ho-Gan said. He was standing at ease, the sword point held so that it was pointing earthward. Suddenly he cast the long blade to one side. "See. I do not choose to fight. Only because I hold honor for you. But I am Saiyon's man. And I must bring you back. Now, on my honor, I say to you that you will receive honorable trial before him and the Knot of Six. . . ."

"They are his also!" Tar-Don the warrior, said. But already there was doubt in his eyes. He knew Ho-Gan full well. A warrior against whom none had ever uttered scorn. A true man, though following a tyrant's deeds. But

Ho-Gan had pledged his fealty and a word was a word and not to be broken except by death. Ho-Gan had given his word that the trial would be honorable. So Tar-Don's next words were tempered, "Yet there have been times when they have ruled against the butcher. I trust my sword to your keeping, Ho-Gan, only because of your pledge—"

Tar-Don's long blade clanged as it struck the one already on the ground. It was the signal of surrender.

Ho-Gan turned his head to one side and spoke to the others of his party, "Ho-Gan has given his word and Tar-Don the warrior has pledged his. He shall walk by my side, unfettered and free. And now the others have come. . . . Hear me," he said to the ten who had come from the opposite side. "Tar-Don walks free among us. A pledge has been made."

One of them stooped and returned the two swords. Then without further talk they started back into the underbrush.

FAITH WAYNE opened her eyes and for a few seconds stared in bewilderment at the scene. She was in some sort of woodland. The calls of birds sounded from near and sweet odors of the forest were strong in her nostrils. She felt too much at peace to move from her reclining position. Then she heard something stir close to her side, turned her head and stifled a scream as she saw the figure of Quentin Pais a few feet off.

He too became conscious at that instant. But unlike the girl he came to his feet, turned and seeing her supine stepped forward the few feet separating them and brought his hands out toward her. She smiled and gave him her hands and he lifted her erect. He continued to hold her hands as she looked this way and that until after a moment

she turned puzzled eyes up to him and asked:

"But where is Don? He should be here, wherever that is."

Pais continued to smile, then with a swift movement he brought her pliant body close to his and pressed his lips on hers. He felt her stiffen then tense as he continued to caress her. She arched away from him. But when he continued she began to fight him.

It was then the stranger appeared.

"Don!" she called in fright. "Stop him!"

With the words, Pais threw her to one side and with an incredibly swift movement brought his sword from its scabbard. Just in time. Another second and he would have been impaled on the point of his opponent's sword. Pais, quicker in reflex than the girl saw immediately that though this man was a dead ringer for Don, there was absolutely no recognition in his eyes. There was only anger and cold steel. Then Pais leaped to one side and parried the thrust of the other's sword.

For a while the only sound to be heard was the clash of steel blades against each other and the sibilant sound of feet sliding on the turf as the two men battled for advantage. It was a fairly even contest with the advantage in Pais' opponent's favor. He was completely at home on the thick carpeting of grass, whereas Pais slipped now and then and felt obliged to worry about his footing. There was no question that after a few strokes the other would have won out, for already he was maneuvering Pais toward a shallow declivity, when his own foot slipped.

Pais took instant advantage. With a quick leap he was on the other. It was sheer luck that Pais slipped also. He landed on top of the stranger and so hard his sword was torn from his grasp. The stranger had fallen to one side, his

head striking a protruding root. The blow had stunned him. Pais took in the other's plight in a quick glance. And before the stranger could move Pais had delivered a terrific blow to the man's chin.

Pais arose, recovered his sword and turned to look for Faith. She was no longer there. His face twisted into an expression of rage, Pais charged to the spot she had fallen when he threw her to one side. There was but one place she could have run to. Into the forest.

She had. The instant she saw what happened to Don, or whoever he was, she had risen to her feet and silently stolen into the shelter of the brush. Once she was safe from Pais' prying eyes, she ran full speed among the vines and brush, stumbling at times, leaping over the twisted matted growth. Nor did she stop her wild running until her breath failed. And even then she continued to stumble forward.

But at last her strength failed and she fell in a heap. She hadn't been aware of it until she lay quiet but then she noticed that the light was failing. Night was well on its way. And for the first time fear came to her. For the first time rational thought made her realize her plight.

SHE sat, her back against the bole of a jungle giant and searched her mind for the answer to several puzzles. Where was she? How had she and Pais gotten there? Where was Don? And if the stranger wasn't Don . . . But it had to be Don. The clothes he was wearing were the same he had on under the sheet they had been covered with back in the laboratory of Pais' home. The same clothes she was wearing. Yet there had been nothing of recognition in his single glance he had thrown her. Nor had there been any of Pais.

Other remembrances crowded her

brain.

There had been that strange feeling of floating on clouds of various colors, then the horrible stab of pain and after that—why the next thing had been the awakening in this strange land. Her fingers went up to the crown of jet-black hair and stroked lightly within its folds. No pain. Not even the slightest ache. A deep wonder was born within her. She hadn't known a day without pain in three years. All she had had to do before was move her head and a thousand pin-points of agony would shoot through her skull. Yet now, after all she had been through, there was no pain.

Suddenly she sat erect. All she had been through— But where was she? What had Pais and that strange Doctor Raven done to her and Don? And how had Pais come along? And where was she? She rose and noticed that the edges of the glade she had come to were beginning to get fuzzy with approaching darkness. She looked up, narrowing her eyes against the gloom and saw a breathtaking sight. Twin moons rode the heavens, each as large again as the moon she had known. Fear and wonder mixed her emotions.

She knew she had to seek safety if it meant only some branch on which she could lie, or wedge herself into. This strange place might hold the threat of animal life she knew nothing of. The sounds of the jungle became louder to her senses. All about her were the life forces of this jungleland. Her eyes moved from one spot to another, trying to pierce the secret places; her ears pricked forward and she breathed slowly and shallowly so that the sound of it would not intrude on her concentration.

She felt the rough bark of the tree against which she was leaning and looked up into the darkness which hid

its topmost branches from her. Not too far from her reach was the first of its branches. She turned her body to the tree and tried to climb its rough exterior. Time after time she slipped. But always she tried again.

She was so intent on climbing the tree she didn't hear the sound of footsteps behind her. The first she knew she wasn't alone, was the touch of a hand on her shoulder. She turned, looked into the masked face close to hers, screamed and fainted. . . .

QUENTIN PAIS wasted little time in trying to follow Faith. He had been in this strange land before, and knew how close the jungle fastness could clasp the unwary to its breast. There was one fact he was aware of, Faith wasn't. There were no jungle beasts. Only men. He had met a few. So after running a few yards into the green depths Pais retraced his steps and moved off into another direction. Somewhere in the hills to be seen in the far distance he would find what he sought, *immortality*.

He knew from the single experience he had that he had a long way to go. But time meant little in this land because it was a land where time was relative. He had stayed here for years, he had thought on his first visit. Yet when he returned Raven had said he had been gone for only twenty-four hours. Now he had given himself a week. His long figure strode the dim path resolutely and his strong yet oddly womanish face was set in a pattern of concrete firmness. But at the back of that strange mind, odd thoughts stirred.

There was the thought of Don. What had happened to him in the strange transition from dust to the reassemblance to the human shape? How was it that only he and the girl had come through? Or were there mysteries

deeper than any he had imagined? The strange warrior, for example. Pais would have staked his life on it that the man was Don. Yet there hadn't been the slightest sign of recognition. . . . Pais shook his head savagely trying it to rid it of these thoughts.

But the damage had been done. He hadn't been looking too closely at the path. The pit's lip was traversed before he could draw back. The downward-pointing stakes slid smoothly past him as he fell forward. But their ugly needle-shaped tips stared him full in the face as he got to his feet and looked up at the patch of blue above him, the sky which spelled freedom.

A wry grin twisted his lips. Caught by the simplest stratagem of the natives. For he knew that this pit had not been dug by anyone else. There was nothing to do but wait. Nor had he long to wait. As if they had been lurking in the background a half dozen figures filled the edges of the frame. Pais' eyes went wide when he saw that they were dressed in the tightly fitting tunic of warriors from one of the three cities. Then a voice from one of them came hollowly down:

"Your rank, stranger, and from whence?"

"Haul me up so that I can face your leader," Pais replied.

He could see their faces look to each other, though silence was the only reply vouchsafed him. Then at a silent signal one of them produced a coil of rope and threw it across to a companion and made taut across the pit. From the middle of the first coil another was made fast and let down to the man below. And while Pais climbed up they held firmly to the rope stretched taut by Pais' weight until it was at a level with their bodies. It was an easy matter then to bring him close.

Once more the question was put to

him. Pais waited until he was breathing normally before answering. Until then he sized them up. The insignia each wore on the breast of the tight-fitting tunic told Pais that they were of the city of Tondar. Elation stirred in his breast. What luck. He had told Satir he would return. It was lucky that these men were not from the city of Han-Don.

"I am Pais," he said easily. "Take me to Satir. He is awaiting me."

The leader, a tall man, wide-shouldered and deep-chested, whose face bore the old scar of a sword cut, looked dourly at him.

"In good time," he made answer. "Your tunic wears no insignia. Art outcast, like Tar-Don . . . ?"

The name stirred memories. "Tar-Don?" Pais asked. "How long is he outcast?"

"Since Saiyon broke his father's city and razed it to the ground and killed all the males. Now we are at war, Tondar and the hordes of Saiyon— Therefore tell me the reason for the absence of insignia."

"I am Pais!" the other gritted harshly. "Satir would not think well of any who questioned his friend. I have asked to be brought before him. All will be well with you when that is done."

The other shook his head once and then again. If, as this stranger said, he was a friend of Satir's, perhaps something could be gained of it. . . . There was nothing to lose in any case.

"Very well. Come with us. We are a scouting party and our time is short for our return."

They swung off in a direction away from that in which Pais had been travelling.

TAR-DON swung along easily in the quick marching step which could cover ground. By his side the dour Ho-

Gan strode, his face lowered and his eyes glowering. Ho-Gan hated the task he had been given with all his heart. There were scum who did nothing all day but fawn for favors who should have been sent out on such a mission. Ho-Gan was a warrior, not a follower of scent.

"I did not ask for this mission," he said sourly, breaking the long silence. "Believe?"

"Of course. Ho-Gan is not known for trickery. His sword was famous even in the far city which once housed mine."

"Aye," Ho-Gan broke in. "It was never stained with dishonor. The blood it spilled was that of warriors in face-to-face combat. I hold it against Saiyon that he did what he did to your father's city. Bah! This war against fools. One is as bad as the other. And what do they seek? Immortality! Why even the Masked People have more sense. Who wants to live forever? Saiyon does. So blood is poured needlessly. Were I anything but what I am and could do anything else, I would throw my sword to the fire and call it quits."

It was a long speech. Perhaps the longest of the grizzled warrior's life. But somehow he felt it in his breast like a sore which would not let him rest. It had to come out. All he had heard of this young bold warrior, Tar-Don had been good. Now he was to be hauled before the Knot of Six. Well, they had better give him fair trial. Or else there would be trouble.

He did not see the oddly gentle smile Tar-Don bent in his direction. It was as if the other's father was at his side. For the first time in a long time a feeling that was good and the desire to live stirred in Tar-Don's breast. With this old one by his side and a couple of hundred strong swords they could break Saiyon. Yes, and even Satir too.

One of the advance guards' voices called out that they had arrived to where the six-legged banes had been tethered. They broke into a trot then and after a moment came to the spot. They mounted quickly for the night was already on them. The banner-bearer hoisted the standard of Saiyon in the fore stirrup and at a shout from Ho-Gan the whole troop was off.

Tar-Don rode at Ho-Gan's side, behind the saddle of one of the men. He could feel the long muscles of the six-legged bane rise and fall in its motion. These beasts could cover a tremendous amount of ground in a short time and could run effortlessly for the setting and rising of many suns. And already the long plain stretched its boundless breadth before them. The twin satellites would be low on the horizon before they reached the city of Saiyon. They were as specks of dust on the great plain.

So it was by the greatest of coincidence that the men of Satir and the men of Saiyon should meet as they did. The two parties caught sight of each other while still a great way off. As their paths came closer to the point of crossing, each party slowed a trifle. For though the twin moons were high and shed a brilliant light, not even the best vision of any man could make out the standard of the other. Nor could they see the insignia on the tunics of each other.

But Ho-Gan saw one thing. That he was greatly outnumbered.

They were but a hundred yards apart when the recognition was simultaneous. And from every throat came a shout of joy. These men were warriors all and what greater joy could be found than in a fight. Further the men of Satir saw they were four to the others' one. Yet Ho-Gan did not hesitate an instant in sounding the cry to charge.

As if they were a single unit the twenty grouped themselves and each man bending low in the saddle, brought out his sword and gave spur to his bane. They met in a wild melee of screams and crashing swords and snarling animals whose sole thought was to bite and tear with their great teeth at the throats of the others.

THE very ferocity of Ho-Gan's charge wrought havoc in the ranks of his opponents. His men had been well-trained. They did not waste time in wild swings but waited until the very second when someone was in range before swinging. The odds went down to three to one quickly. Then the charge was spent and the fight became general, man against man and beast against beast.

From the first Tar-Don had placed his sword at Ho-Gan's command and as he thrust and swung with terrible effect his heart sang a wild paeon of joy that once again he was fighting. It was doubly hard for him to fight effectively because he had to hold with one arm to the middle of the man in front, and now and then be on the watch that the other's swings did not throw him from the flat saddle.

Suddenly he heard the man in front grunt thickly and felt the wet tip of a sword blade slide past his own throat. A fountain of red stained the front of his tunic and for an instant Tar-Don maneuvered wildly in the saddle for balance as the man he was behind became actual dead weight. The trouble was the dead man's feet were caught in the stirrups. There was but one thing to do and to do quickly. Tar-Don could not use his sword and the next ones to come his way would have easy pickings. With a terrific swipe of his sword Tar-Don slashed downward, severing the dead man's right foot at the ankle.

Thrusting the dead one sideways, Tar-Don vaulted forward and took the other's place as he slipped away and fell off. Tar-Don did not need the use of the stirrups. Since childhood he had been taught to ride without the use of them, to guide the bane with kicks of his feet. That training came in handy. With right and left kicks he directed the beast from side to side whenever the need for such a maneuver came. Time after time the coordination between man and beast saved both their lives.

And the flashing sword of the man was like a streak of light from the twin moons, so fast did he thrust and parry and swing. Time after time he was beset by three and sometimes four men. But always, with the bane moving swiftly at the bidding of his master's feet, Tar-Don not only escaped but slaked the sword's thirst as well. He left a wake of corpses after him, and his own body was as red as the dead he made.

How long the fight raged Tar-Don did not know. But suddenly he became aware of the fact he had somehow managed to fall by the wayside. The fighting was spread in every direction, but the men of Ho-Gan's squad were trained well and tried to fight as a unit, no matter how they were assailed.

Tar-Don rested a few seconds, his sword held loose at his side. The loud breathing of the bane was a minor chord against the still-to-be-heard clash of arms. Quite suddenly two figures separated from the rest. First one then the other took turns chasing each other. It was a pattern of fighting where each tried to come in from behind. So it was that the two chased each other.

Tar-Don would not have paid more than a first glance at them had it not been for a something he saw which made him dig his heels hard into the

side of the bane. Coming in at a sharp angle was a third mounted man. And he was coming in at such an angle that the one man would be boxed between the two of them. And as Tar-Don came on he saw that the one in the trap was none other than Ho-Gan.

He was too late by a second. Either Ho-Gan had not been aware of the trap or he was too intent on his single opponent, but the second had the chance to get in the single thrust that was needed. And Ho-Gan leaned forward for an instant, then fell sideways. What was worse, his feet were caught in the stirrups of the bane and the animal galloped off back toward the forest they had quitted only a short while before.

A SEETHING torrent of anger flowed from Tar-Don's heart to his brain. It found voice in meaningless sounds, screamed from his throat. Had he left room in his mind for thought he would have known that the best way to come against these two was by stealth. They had accomplished what they had intended and were now returning, side by side, to the fray.

But Tar-Don's screams warned them.

They turned as one to see this new figure of threat. One glance and they knew who it was. And as they turned, the single warrior recognized one of them. It was the man who had been struggling with the beautiful girl. The one against whom he had pitted his arms. Then from the throat of Tar-Don, the warrior, came a wild shout of joy, the words of which were measured in infinity, for they were words of battle handed down from father to son, through all the countless generations.

The two had turned with confidence. But neither suspected the strength of this man, or his way with a weapon. He was the light streaking from the sky,

the movement of his sword hand was like the wings of a bird in flight, the cunning of his warrior brain, trained in battle since childhood, was as the cunning of the wariest wild animal, struggling for life against insurmountable odds. So he fought.

Now he was flat in the saddle, his body stretched for almost its entire length along the body of the bane, and his sword flicking out in lightning-like thrust, as he passed between the two. Then he had tugged hard against the bridle and delivered a kick into the flank of the bane and the animal reared back and twisted to one side as the two tried to get in simultaneous blows.

But Tar-Don's unexpected maneuver made them both miss. The tall warrior whose tunic bore the insignia of the city of Satir paid for missing. It seemed Tar-Don moved the sword from his wrist alone. Yet the sword sped with the surety of a bird winging toward its nest, straight for the other's heart. The warrior jerked erect, his face contorted in the grotesque mask death brings, and fell backward out of the saddle.

Pais didn't wait to see or know what happened. He bent low across the saddle and kicked hard at the bane and galloped off. But Tar-Don was no longer interested. The thought of Ho-Gan came to him. It was not meant that a warrior of Ho-Gan's worth should lie alone and unattended. . . . Tar-Don had the feeling that he would meet again with the stranger and that their affairs would be straightened on the future meeting.

So he turned and galloped off to where the bane carrying Ho-Gan's body had gone. In a short while he entered the forest thickness and was enveloped in its gloom. And from hidden places in the brush a dozen masked figures crouched, their beady eyes intent on the

single rider. A single thought was in each brain. How soon would this one's mount stumble across the slender thread of vine stretched across the only path he could take—

FAITH WAYNE felt hands touching her, heard words and phrases spoken in soft accents, as if women were attending her. Then the memory of the hideous masks returned and she opened her eyes. And once more a scream was stilled in her throat. The memory was of something real. There had been masked figures, small as children. As she stirred and opened her eyes, the dozen or so figures set up a childish clamor of sound. Some of it was not understandable. But one sentence she understood . . . "The Goddess has life. It has returned to her."

With those words the fright left her. These creatures intended no harm. It was to be seen in the dance some of them were doing. It was a simple dance. There were four couples and each paired off and danced back and forth clasping hands for a second then doing a couple of backward steps, only to return and again clasp hands.

She scrambled to her feet and the clamor and dancing were stilled, the tiny figures becoming immobile. But at the first wrinkling of her lips in a smile, little shouts of delight came from them and they scrambled to get close to her. She looked from one to another trying to find one who was in command. But it was impossible to tell.

"Who among you is the leader?" she asked.

One of the tiny figures stepped forward. Its face was covered by the most hideous mask of all.

"I am," it announced. "I am Lillo."

It was impossible to say whether it was male or female. All their voices were in the same childish treble.

"Come, Goddess of Life," Lillo said. "Come with us. We will take you to Hammos, our Queen."

They turned and started off through the forest nor did they look back to see whether Faith was following or not. She didn't hesitate but walked in their footsteps. The way was devious. For them it was simple because of their smallness. But for Faith it was difficult, not because of her size alone, but also because the way they took led through the deepest underbrush. Nor was their destination close by.

As she struggled over the tangled brush Faith found time to think. There was something strange about this whole adventure. She was not only curious about these little people, but about several other things also. She was not hungry, for one thing. And certainly she should have been. More, time seemed to mean nothing, or distance either. Was this stay in this strange place permanent? She shook her head trying to drive the terror which some thoughts might bring from her.

She was so lost in thought she almost stumbled over the group of tiny figures. They were waiting for her evidently, for as she stepped forward the one called Lillo took her hand and told her to stoop. She noticed then that they had stopped before what seemed to be an impenetrable wall of underbrush.

One by one the figures bent and started through the small opening in the brush. Faith followed the lead of Lillo who was the last of them to go.

"Hold to my foot," Lillo commanded as he went to his hands and knees. "But not too tightly."

THE darkness was complete. There was only the sound of the movements of those ahead. Her senses, heightened by her circumstances, told her that they were in some sort of tun-

nel. She could feel the smooth floor of it, and once when she lost the tiny foot she had grasped she felt about for it in sudden terror and felt that the smoothness of the floor had its counterpart in the walls also. But it was a very low-ceilinged tunnel. She had lifted her head once and though she hadn't lifted it far the resulting bump made her see stars.

Quite suddenly there were the sounds of quick movements and from ahead the sounds of many voices. And almost immediately Faith's head came out of the tunnel and she saw the encampment of the Masked People.

"Rise, Goddess," Lillo said. "For soon we come to Queen Hammos of the city of the Masked People."

The first of those through had rushed forward to tell what they had found deep in the forest. Already a cavalcade of the little people were streaming toward the opening in the brush, all anxious to be the first to see the goddess.

There must have been a hundred of them, all silent, but all trying to get as close as possible to Faith, as Lillo escorted her proudly to the most elaborate of the huts. Hung above the opening of the hut was the most terrifying mask Faith had ever seen. It was a work of art.

The crowd came within a few yards of the Queen's residence and stopped. And from their throats came a chant:

"Mighty Hammos . . . Mighty Queen . . . We bring the Goddess of Life. Make her welcome."

Then from the hut came the most unusual woman Faith had ever seen. She was no more than three feet high and was naked but for a breast plate and loin cloth of some sort of silver filigree. Her hair was the color of woven platinum and was piled high on her head. Her face was the face one would have expected of Alice as she

stepped through the mirror. It was like that of a child freshly awakened from sleep. But the most wonderful, the most beautiful thing in that face was her eyes.

Faith could only stare in awe.

"I bid thee welcome," the tiny woman said in wonderfully sweet tones. "It was writ that the Goddess of Life would come. So it has come to pass. I am proud that it was to us thou hast come. Welcome."

Faith didn't know what to say. The situation called for some sort of reply but the words simply would not come to her lips. A shy smile lit her eyes and mouth and suddenly she bent and lifted the tiny woman close to her and pressed a kiss on both dimpled cheeks. They were smooth and soft as down.

A frightened silence fell among the Queen's subjects as Faith bent and lifted the woman. But when they saw what happened and realized why Faith did what she did an excited murmur filled the still air. Faith had done the one thing possible and the correct thing. The Queen's eyes were alight with excitement as she stepped back and looked up at Faith.

"Come, Mighty Goddess, and sit at my side and tell me of your journey. Relate to us the wonders that occurred. For it was writ that you would come wearing strange costume and that you would be tall and gracious and beautiful and that a smile would be on your lips and a song in your heart and that the Masked People in whom had been given the trust of the Sacred Flame would have their reward," Queen Hammos said, as she gestured with her hand for Faith to precede her.

THE hut was quite large even by the standards of a person of Faith's height. It was divided into separate compartments for various functions.

The main room was the throne room and was entered into from the single entrance. At the far end on a raised platform stood the Queen's throne, an elaborate chair covered with a cloth-of-silver covering. There was no seat for Faith. The queen gestured for the other to take the throne but Faith plumped herself on the platform close to the Queen's feet. As many of the little people as could crowd the hut got in, all eyes and ears intent on the two on the dais.

Now their masks were off and Faith looked about. It was like being in a room full of children. Not a single one showed signs of age. It was strange, for obviously they could not all be children. Yet not a face showed a wrinkle, not an eye was dimmed, nor were there any of the other visible signs of age.

"Tell me, Queen Hammos," Faith began. "Why do your people wear these masks?"

"It was said long ago," the Queen replied, "that all men have two faces. But look about you. We have but one face. We have one face because we have but one heart. And nothing but good lies in our hearts. But we are the protectors of the Sacred Flame. And so we must show that we hold anger and greed and all the vices men hold in their minds and souls. Otherwise they would come and tear the Flame from its sacred resting place. There are many who cannot know immortality. The trust was given to us many thousands of years ago. And when I received it, I and all my subjects were cleansed by that Flame. . . ."

Many things did not make sense to Faith. This, of what the tiny woman spoke, made the least. What did she mean? There was only one meaning Faith could get out of the words. That the Queen and all the other little people were immortal.

"... When we wear the masks we are inwardly as we show outward. Cruelty and cunning are our defense. My city is well-hidden. It would take more than all the banes in the world, more than all the armies of the two cities which are left, to break through the defense of the thorn forest. Were it not for the fact that you were guided into this land, you would never have found it. For the openings are known only to one of us. And not even a bane can smell it out."

Suddenly the Queen looked away. Her head cocked to one side, she bent to an attitude of listening. Now Faith heard the shouts too. She could not quite make out the words, but the ones at the end of the room near the entrance could, for they turned and streamed from the hut.

"Come!" Queen Hammos commanded. "They have captured two from the land beyond the forest."

The first thing Faith saw as she came into the open was a group of the tiny people hauling at something which dragged on the ground behind them. Then she noticed that all the others had run for their masks. She turned in time to see several men hauling the Queen's mask down from its standard above the entrance to her hut. The Queen donned the hideous thing and marched for the group who were standing above the two figures they had dragged in.

Faith walked by the side of Queen Hammos until they reached the others. She saw then the faces of the two men at the end of the long vine ropes. One was a stranger to her. The other was Don Homer. . . .

THE jungle night closed its folds of darkness about the man and beast. Somewhere in the Stygian gloom ahead, Tar-Don knew that Ho-Gan lay. Tar-Don remembered the exact spot where

the bane had borne the old warrior. A white-faced boulder stood to one side of it. He knew the bane needed no urging. The beast had a sense of smell which was miraculous. That sense was like a flag of warning in times of danger.

The bane was no longer running free. As if it understood the task it had been given it trotted slowly, nose pressed inches above the ground. Suddenly it lifted its head. And Tar-Don, warned that something lay there, peered through slitted eyes, trying to pierce the gloom. He saw it after a few seconds. Ahead, between the boles of two huge trees a bane stood patient and immoving. But nothing was on its back.

Tar-Don slipped from his mount and ran forward. Ho-Gan could not be far from the bane. Tar-Don was within a couple of feet of his goal when he stumbled over an obstruction. He tried to recover his balance, but just beyond the first vine was another and beyond that a third. His right foot struck the second, his arms swung wildly and he fell forward. And even as he fell a dozen figures leaped from their places of concealment and flung themselves on him.

Their weight alone kept him powerless. It did not take them long to bind him hand and foot and in such a way that he could not help himself. Then, with six at the end of one vine rope and six at the other end they dragged him deeper into the dense jungle.

His face felt the sting of every root and the bite of every stone. The tiny men, their faces covered with masks, the grotesqueness of which could not be seen too well in the gloom, seemed not to care whether he survived his capture or not. They bent and strained forward, hauling at the ropes with all their strength.

"Ho-Gan!" Tar-Don called aloud as they came to a small clearing and he

saw that he was not the only captive taken.

Ho-Gan, alive as ever, though looking as though his face had come in contact with a thousand biting insects, sat, his back against a tree. At the shout he turned and grinned at Tar-Don.

"Aiee! Tar-Don, as I live and breathe. You also?"

"I saw them attack you and followed you after striking one to the ground," Tar-Don replied. "But you are alive."

"It was an old trick," Ho-Gan said. "His blow took me along the ribs. But it was a mean and wicked wound. So I played dead for their benefit. My bane was well-trained."

Tar-Don laughed aloud. But the thought of their present predicament sobered him instantly. "But now what?" he asked.

Ho-Gan's shoulders heaved in a shrug. "They are the Masked People. And none know what they will do. For there has never been one who has returned from the depths of their city. . . ."

"I have heard they are the cruelest race in existence," Tar-Don said. "They say there have been a few who have returned, though I have never met one. Ah, well. Perhaps it were best this way. Saiyon is not known for the brand of mercy he gives."

Though Tar-Don could not see those who had captured Ho-Gan, he could hear their movements mingled with those of his own captors. Their voices, low and tinkling, came dimly to his ears. Suddenly he felt the slack taken up in his bonds and once again he was being dragged. Like a curtain, the semi-gloom of the forest disappeared and a more complete darkness took its place.

It did not take him long to realize the newer and more complete darkness was man-made. For he could feel the

smoothness of a hewn floor. No keen-edged rocks, no vines trailing thorns which stabbed and embedded themselves in the flesh. Here even the sides of the tunnel were smooth, for now and then he rolled in vain effort to free himself, and he could feel the slick, worn stone.

THE way seemed interminable. And at last, when he thought the end was never to be, the journey ended. He could see light again. They were in some vast clearing, for above him the sky was sharply etched against the thick dark branches, and the twin moons rode high and serene above. For the first few feet in the light there were only the sounds he had become accustomed to. But now new sounds were heard, small shoutings of many voices. The hair stood erect on his nape and a thrill of horror shot through him.

"... Kill them! ... the voice shrieked. "... Kill them. ..."

He twisted and tugged savagely at his bonds, his face contorted and his body heaving this way and that in the wild efforts he put forth. But it availed him not. The vines held the strength of the steel of his sword.

Silence fell with a suddenness that panicked.

He turned his head this way and that and saw that he and Ho-Gan were completely surrounded by the masked figures. More and more kept running forward. But he saw too that they were all looking backward. And after a short while he saw the reason for it. The most terrifyingly masked figure of all appeared in his line of vision. There was a shadow of something to be seen behind her but he could not quite make it out.

A woman's voice came from behind the mask:

"Oh what shall we do with these, our

enemies?"

"Kill them," the crowd roared.

"Is that your command?"

"Aye!" It was unanimous.

Almost so. But suddenly in the silence that fell, another voice was heard: "No! I, the Goddess of Life, say no!"

"Why?" asked the voice behind the mask.

"Because he is not an enemy. I know him well. He is a friend."

"There is none who is friend among these," said the small figure. "How is it that you know him?"

"I knew him in the long ago," said the hidden figure. "I knew him as a good man. There is no evil in him."

"She lies!" shouted a masculine voice. "These two knew each other. The young one came looking for the old. I and the rest of us heard him. Is it not so?"

There were voices of agreement.

The first continued: "If goodness lies in his heart then why does he wear the sword of death? Look! It is still dripping with the blood of those he has slain."

Oddly, it was Ho-Gan who gave answer:

"There is but one way to fight injustice. With a sword. Tar-Don has never raised his except in righting a wrong. It would be a miscarriage of justice for him to be put to death."

For a moment which seemed like a lifetime there was silence. Then Queen Hammos gave the verdict:

"Death! The two men and the woman. Whether it is as the old one says, has no real bearing. We are the keepers of the Sacred Flame. It is in our keeping and so we must guard it ever and ever. The young one must die simply because he was unfortunate enough to be taken prisoner along with the old one. As for the woman, we were deceived by her beauty and grace and the

pleasing quality of her voice.

"Therefore I say their souls shall be cleansed by the Sacred Fire. They shall know at the last, immortality. For was it not the secret of it they sought, they and those from whom they come? So be it. . . ."

A signal a half dozen men sped to Faith's side. She looked down at them, saw the masks hiding those childish and innocent features and felt a shudder stir her. If only she could look into those eyes, plead and see what effect her words had. But she knew it was useless.

Others of the little people untied the men prisoners after removing their swords. Ho-Gan and Tar-Don arose, shook themselves and eased their tired and strained muscles. A watchful wariness was in their eyes. They were not going to give up without a struggle. Yet a way of escape had to be found. The little people seemed indifferent, the blank-faced masks hiding whatever was in their minds.

"Let us not delay," the Queen said. "The way is long and soon the sun will be up. Already the twin moons ride low in the sky."

Faith followed the direction of the Queen's pointing hand and saw that already only a tiny part of the two moons could be seen far down on the horizon just above the treetops. And as she turned back she saw the first pale-rose sign of dawn breaking into the greyness of the sky.

The entire population turned out, as guards fell in by the sides of the condemned. It was then the three saw the immensity of the enclosure. The way stretched level for miles to all sides, with neither a break in the flatness nor a tree nor even a bush to break the monotony of the plain. But always, as if in protection, the great forest stretched

its limitless path on guard against intrusion of this idyllic land.

The way was long and the three walked between long lines of silent people. There wasn't a single sign of a weapon among the hundreds of little people. There was no need of any. Once a man was prisoner he was irrevocably chained to the land unless given his freedom by the Queen. The vast forest encircling them was a forest of thorns, impossible to penetrate. More, the long thorns promised death in a long agonizing way to those foolish enough to try. No matter what the death of the little people, it would be over with quickly.

The sun came up and shed its light and warmth and touched the green of flowers and plants. It made a mockery of their present freedom. Faith walked by the side of Tar-Don. She could not take her eyes from him. Ho-Gan had vouchsafed her a single musing glance, then turned his glance straight forward, as befits a warrior condemned to death.

"You *are* Don!" Faith said emphatically. "I *know* it. Let me touch your head."

He gave her a quick look, felt his face redden and replied:

"My-my head? But why?"

"If you are the man I think there will be the evidence of it in a tiny circular bit of bone rise where the needle went in when you were operated on for a tumor."

"Tumor?" It was evident the word meant nothing to him.

"Yes . . ." She wasted no more time in talk but pressed groping fingers along the upper part of his head. Suddenly her eyes lighted. "Aha! Just as I thought. You *are* Don. I felt the ridge. Here. Feel mine." She bent and offered her crown of gleaming black hair to him.

He saw then that someone had shaved off a tiny area of hair up high

in the center where it would not be noticeable. He felt of the spot and his eyes went wide as they felt a small protruding ridge against the flesh.

"You see," she said in triumph. "I was right. Now what is this game you are playing with me?"

"But I am *not* this Don you think I am. My name is Tar-Don. As for what you felt. A club tore a piece of bone from my skull several years ago. That is what you felt."

HE WAS so emphatic she pressed him no more. Yet she could feel his eyes on her in sidelong glance. That something was radically wrong she was certain of. There was one man who had the answers, Quentin Pais. She was stirred from her musing by the sudden murmur of the crowd pressing them in. Unconsciously, she had come to a stop, as had Queen Hammos and the rest.

They stood before a large hut set squarely in the midst of the plain. There was no other hut in sight for as far as the eye could see. The three prisoners sought each other's eyes in wonder. Was it in this place death was to come to them? As one they turned a look backward. The entire crowd had fallen to their knees, their heads bent low in obeisance. Quickly Faith and the other two turned to see what the Queen was doing.

She was standing before the entrance to the hut, her arm in a gesture bidding them enter. And now the voices of the rest were raised:

"The Sacred Flame . . . Let them partake of its cleansing spirit."

Now the guards were pressing them close, shoving at them to enter. For one wild second Tar-Don felt a sweep of volatile rage take hold of him. Better to die fighting than to walk into death like babes. He turned, his body sud-

denly bent a trifle and his hands ready to wreak whatever damage they could. But Faith stopped him.

"Wait," she cautioned. "I don't know why but I think we'll come out all right. Just let me do the talking and acting."

The Sacred Flame provided all the illumination for the hut. It hung suspended in mid-air in the middle of the room, a bar of colored fire about five feet in height. The lower end of it was some few inches off the floor and it extended for perhaps six feet across its width. It hung suspended as by invisible wires.

More and more of the Masked People crowded into the room until the three prisoners were forced almost into the flame by sheer numbers pressing them. Then the last of them were in and the Queen stepped forward once more. She stood to one side of the flame and looked at the three.

"The Sacred Flame," she said, "holds immortality. Life everlasting. Or a quick death. One step into its purifying flame and you are cleansed of all sin, as well as cleansed of all evil. Which of you shall be the first?"

"Let it be me," Ho-Gan said. "For I am old and have had a full life and many men died under the steel of my blade. It is time I go. Tar-Don is young and has a mission to fulfill, a mission which has justice behind it. As for the woman, she is full of grace and beauty and has courage. Let them both free, for surely the Flame will have its fill of vengeance in the consuming of my body alone."

"No!" Tar-Don stood forth. "Men such as Ho-Gan do not come often to the light of the sun. He has lived a full life, it is true. But it has been a life which has led toward a single end. That men shall be free. Yet he does not know this. I do. His courage and wisdom is known the length and breadth

of this planet. But because he is not the King, he has been thrust aside to menial things.

"Let me be the one to partake of the fire. It is true I have not lived long. Then let me be the symbol by which you can recognize the goodness of Ho-Gan. As for the woman, she is as Ho-Gan says. And there is not enough of her beauty and grace on this strife-torn place. Let her live also. Mighty Queen! Do not be too bloodthirsty. A single sacrifice will prove my right."

But Faith did not talk. Before the other two could divine her intention, she leaped forward the two steps separating her from the Flame and stepped within——

QUENTIN PAIS whirled away from the avenging rider and spurred his bane forward. The beast responded instantly, its six legs driving in terrific leaps until in a matter of seconds, Pais was safe from pursuit. He did not ride directly back to the scene of the fight but rode to one side. When he saw that the forces of Ho-Gan were beaten and fled from the battle he rode again in the midst of the victors.

He called them to him and spoke surely, with an air of command they could not disregard:

"Look now," he said. "We have beaten them. But some have escaped and those will go back to the main body and report of what has happened. We have lost our leader. But we do not need one. For there is but one thing to do. Get back to the main ranks of Satir's army. Those few men whom we just met must be a scouting force. Therefore it is to the advantage of our forces to let them know."

There was a silence broken at last by one of them. "He is right," the warrior said. "Satir should know. Let us back, then."

As one the troop turned and raced away. The plain stretched its way interminably. And slowly, almost unnoticeably, the contours of the land changed. Now there were small hills, rolling to meet them, and after a while the hills became higher, the valleys deeper until at the end they were riding in the midst of small mountains. And still not a sight of man or beast.

They rounded a sloping shoulder and from both sides of the slanting hillsides shouting riders plunged down to meet them brandishing spears and swords and from above others rose as from the barren earth itself, to threaten them. But the threatening shouts turned to welcome ones when they were recognized.

"News for our leader," shouted the lead rider as he and the others continued their wild gallop. "We know where Saiyon's camp can be found."

The other's voices were raised in glee as they joined the forces of the scouting party. Their shouts soon brought results. Pais, in the forefront, saw stretched out before him a long shallow valley. Carpeting the entire valley, like numberless mushrooms in full growth, stood row on row of tents. They were all of one height and there were hundreds of them.

Long before they reached the first of these, they saw the rows of spiked poles stretched out in a long slender line of threat and after them the pits, concealed to even a discerning eye. After these came the mounds from behind which foot soldiers would come to dispatch the fallen. But now they were empty for it was almost daylight.

The sound of their voices, however, had raised an alarm. They could see now that men were pouring from the tents. From a long way off a trumpet sounded and after a second another and another until the entire camp knew

of their approach. But the first had already seen the standards of their city and slowed the pace of their banes.

So they rode, joined by hundreds of fellow warriors, to the very tent of Satir, who termed himself, The Magnificent.

They did not dismount, but waited proudly for the appearance of their monarch. He had been told of their coming, and after a short wait, appeared before them. It was then Quentin Pais slipped from his bane and approached Satir. At sight of the approaching man in the tunic without insignia, Satir's eyes went wide, and then a huge smile broke on the heavily jowled face.

"By all that's holy!" he shouted. "It is my friend, the man from the unknown. Welcome. Join me and regale me with the adventure which surely befell you on this journey!"

PAIS granted the other a shallow smile, waited until he stepped within the tent folds and followed. Several others who had appeared with Satir also stepped into the soft light of his tent. Satir strode to the far end and fell back among the pillows which had been placed there for his comfort. He motioned for Pais to join him.

"Alone, Satir," Pais said softly. "What I have is for your ears alone. Understand?"

Satir's eyes slitted in silent laughter and his huge belly shook like a jelly mold. He folded his heavy legs under him, looked about at the others, all standing and all silent waiting on their King's words. He said nothing. But in his look was a command which they all understood. And one by one they left until at the end Satir and Pais were alone.

"So, my friend," Satir said. "Tell me of your journey."

"It was as uneventful as the first. The flame had given me knowledge of the future and I was but returning to the scene of a former victory. This time I brought two with me, a man and a woman. Both for diversion's sake. The woman came through, but the man didn't. At least he was not with us. Yet he should have been. Instead, a strange warrior, whose breast insignia was strange to me. He called himself Tar-Don. . . ."

"Tar-Don! An outlaw since Saiyon razed his father's city and killed all the males. But Saiyon was a fool. He wanted everything. As a result he will get nothing," Satir broke in. "But of that, later. Go on."

"... Yet I would have sworn he was the man I sent through the mists with us. I must break the puzzle he has given me. But to the more important things. My machine works perfectly. The flesh becomes dust and in a short time is brought back to its original form. But it does not do what the Sacred Flame does, give immortality. Now, Satir, we have both. I say this. You know where the Flame is. It must be contained in some sort of vessel. Therefore send enough men to capture it. I will go with them. . . ."

"We will go with them," Satir said softly. "I like you, have liked you since first I met you and you filled my head with schemes of world conquest. Conquest eternal with the Sacred Flame. I like you, my strange friend, but I do not trust you."

"But what of your coming battle with Saiyon?" Pais asked.

"They are going to attack tonight. I have it from my spies in the very court of Saiyon. He is already on his way, is camped not too far from here. I have his complete plan of battle. And we are more than prepared. His legion will fall. And he will die the same

death his bane will be given. The Sacred Flame is more important.

"The Masked People guard it. They do not use weapons. Their only weapon is the forest in which the Flame is concealed. No one can penetrate it. Yet the simplest of all plans can sometimes be the best. We will simply set the forest on fire at several points. When the fire has done its work there will be no more Masked People and no more thorns. Just the Flame eternal."

"But who will recognize it?" Pais asked. "For the fire which will destroy all else might also destroy that. Further, the Masked People will know the reason for the fire. They might do something about it."

Satir's nostrils became pinched white flesh as anger showed its visible signs. His eyes narrowed until they were almost closed and his lips lost their color so close were they pressed. It was all too evident he hadn't thought of the angles Pais had brought up.

"Then what is your suggestion?" he asked.

PAIS smiled grimly. This fat one was not a fool by a long way. But ambition can twist the keenest mind. Pais was too coldly emotional to let himself be swayed. Satir would have his uses. But Pais had to play the game with gentle ways for the present.

"Look, Satir," Pais said gently, leaning slightly toward the other as if what he was saying could not be spoken of above a whisper. "The Masked People have been seen beyond the shelter of the thorns. They did not fly out. They must have used a passage. Further, they have been seen in various places, some not too closely related. Therefore, if they have a passageway out, it also leads in.

"I see you are already apace with me. All we need is enough men to con-

concentrate on a given area and we are sure to find one of the entrances. Am I right?"

"You could not be more so. Homan! Saphit! Fahed! . . ." Satir bellowed suddenly.

The three Satir shouted for came on the run. Pais saw they were not the usual court hangers-on. These men were warriors all. It lay in their savage lusting eyes, in their lips and noses, in the way they carried their swords, in every inch of their bearing. Nor did they approach with fawning faces. These were proud men and justly so. They stood before Satir in rigid attention.

"Homan," Satir leaned forward and spoke to one. "I will want a hundred of your best swordsmen. At once. Go! . . . Saphit! A hundred of your pikemen. Go! . . . Fahed! It is you to whom I'm giving the greatest task. I will want from you one hundred of the smallest men in my entire army. These must also be expert swordsmen. Further, they must expect to die to the last man if need be. For we are on a mission which knows no retreat. Do you understand?"

"Mighty Satir," Fahed said, "your wish is my command. They will be waiting at the time."

"Good man, Fahed. It is why I trust you and the others. You have never failed me. Go now and wait my coming."

Satir waited until Fahed left before resuming. "My Uncle will command my forces. He is ambitious and hopes for great rewards. I will grant his desires. These three will be back soon. Come, we must make ready."

Satir was fat. Yet it was that peculiar fatness which held layers of muscle under his obesity. In a land where strength was not an uncommon commodity he was considered a strong

man. Not alone physically but also in an inner strength which had held to the position by right of it alone. Furthermore Satir had a large measure of intelligence. When first this stranger had been brought before him in the long ago and had told him of his plans for conquering a whole world, with the aid of his scientific achievements and the Sacred Flame, Satir had realized the tremendous possibilities involved. Immortality made any man invulnerable.

But immortality plus the other's invention meant a strength no one could fight against.

All these things went through his mind as his sword and battle garments were placed on him. Pais sat and waited for the other. He felt he could read the King's every thought. And he smiled to himself, knowing that his own position was secure. For without Pais, Satir could get nowhere.

Outside, a trumpet sounded the ready signal. And Satir motioned for Pais to come along. The three hundred were lined up, ready for battle. Satir walked down the long ranks, inspecting each and every man. At last he nodded in satisfaction. His lieutenants had not failed him. These were the very cream of his army.

He gave the signal for the advance, the standard bearers lifted high the banners, trumpets gave forth with their wild sounds and with a roar of voices they started off at full speed in the wake of their King.

THE sun was a ball of flame starting its journey across the face of the heavens, as they reached the edge of the forest. They rode along the outside perimeter for a while; Satir had sent out a party of scouts to find where the thorny edge was least to be found. At last the scouting party returned. They had found a place of entry. It was then

Satir gave his command and plan of battle. It was quite simple. The group of midget warriors, under Fahed, would make entry when they found the place from which the Masked People came and hold the entrance on the inside until the others could come through. Then the entire force would fall into battle dress and march against the Masked People.

The great, green forest enfolded them and in a moment it was as if they were lost. The tiny men marched straight forward, their hands close to the weapons at their sides, Fahed at their head. Next came Satir and Pais, leading the pikemen of Saphit's. And at a little distance, Homan protected the rear with his swordsmen.

It was not long before they came to the "protection" of the Masked People. Great thorn trees set so close together no human could make his way between them, each a mass of great thorns, six inches long of poisonous spike. These spikes started almost from the ground and extended to the topmost branches.

Pais stood beside Satir and watched the swordsmen, aided by the midgets, hack at the underbrush. "Why here?" he asked.

"The only man known to have escaped the Masked People is Fahed. That is why I placed him in command of the little warriors. I should have thought as you did. About the entrances. Fahed says it was here somewhere."

Fahed proved to have a long memory. He bade his men chop at almost the exact spot where he had tunneled out so long ago. When the entrance was discovered Pais and Satir ran to the spot and went down to hands and knees.

"A man would have to crawl on his belly to get through this thing," Pais said.

"That's why I got the little warriors.

They can move swiftly. And being good swordsmen can hold on until the rest of us get through."

Already Fahed was assembling them and sending the first of them through. The way must have been long because it was quite a while before one of them came back to say they had reached the other end. As befitting the King, Satir was the first to venture into the long, twisting tunnel. Quentin Pais came right behind.

Eagerness and curiosity were bright in Satir's eyes as they reached the placid land of the Masked People. There before them stretched the strange city of huts, each as tiny as the people themselves. The two men standing side by side had the same feeling, simultaneously. Not a single one of those huts held an occupant. Their intuition was verified moments later.

"What now?" Pais asked, as the three lieutenants and Satir gathered in a group before one of the huts.

"They must be somewhere," Satir said. "There must be a hundred of these huts. Which means there must have been several hundred of the Masked People here. These huts do not have the look or smell of abandoned places. Something must have happened which made them go off somewhere. Go, men, and see if your men can pick up their trail."

THE trail was as wide and plain as if it had been deliberately made for the purpose of having it followed. Satir had his lieutenants send out scouts to cover their flanks and rear, even though it was apparent that not a bird or animal could come out of hiding without being seen. The plain stretched wide and free before them, flat as the palms of their hands.

But the way to their goal was long. The sun rose higher and higher and

stretched above their heads. The only sound to be heard was the surf-like swish of the soldiers' sandals in the grass. But these were picked men and their faces were set in immobility, hard as granite, stolid as the earth. And finally there came running back at full speed the small party of vanguard, their faces alive with excitement. They had seen their goal in the distance.

Satir ordered battle formations formed on the instant. Ranks closed and the pikemen moved forward on the run; theirs was the duty of penetrating the enemy lines and dividing them so that the swordsmen could get in their deadly close work. Runners were sent out to the flanks and rear to relay the news and put them on greater alertness.

Now they marched at a quickstep that was almost a trot. Pais, his face gleaming with sweat and his breath coming quickly in gasping pants managed somehow to keep pace with the others. He looked now and then with awakened admiration to the huge figure of Satir, at his side, moving as easily in the quickstep as the rest of his warriors. There was a new air about the King. An odd air of ferocity, as if the proximity of battle had stirred him, as if the smell of blood-to-be-spilled was already in his nostrils. And with that admiration came fear. For the first time Pais felt that he underestimated this man. That he might prove to be less amenable to Pais' schemes for conquest than Pais had thought.

They topped a small rise and saw the place of hallowed spirit. There was not one of them who knew what to expect. Not even the least imaginative could have thought the Sacred Flame was housed in this simple hut, this simple timbered edifice. And yet even the least imaginative felt a surge of fear. It was like an aura of other-worldliness, set in an idyllic charm and simplicity, as if it

lay beyond and above the touch of human passions and foibles.

Satir raised his hand in a signal for his small army to come to a halt. Pais and the three trusted lieutenants gathered at his side. Satir looked straight ahead, to the goal of his dreams, the goal of immortality. A smile which could be best described as pensive lighted his face. It had proved to be so simple. And now the whole of this planet lay in the palm of his hand. For now he could know defeat, and know it would be temporary, for the immortal cannot die. And in the end he would win out over all odds. So for the few seconds these thoughts raced through his brain he stood immobile. Then, like a gesture of fate, his hand went up and forward. And the small legion pressed forward, on their lips a growl of anticipation of battle.

AND from the low crest of the opposite end of the saucer-shaped valley four hundred men streamed down in mad dash. At their head, a blaze of maniacal fury on his face, strode Saiyon, the Butcher, his long lean figure alive with repressed desire and passion. His brain knew but one thought. It was like a song which had been learned by heart and never forgot.

The long, long time of waiting for vengeance to be his was at hand. No longer would there be a Knot of Six to hold him back, to say he had judged badly. No longer would his kingdom be the weakest, the one most looked down upon. No longer would there be laughter in the halls of the fat one, Satir, at mention of Saiyon's name and plans. He had started out well. Tar-Don's father had been the first to feel the steel of his strength. True, the excuse for the beginning of his quest had been a small one. Yet legitimate. Even the Knot had granted him that. They

had not liked what he had done to the city, but again he had won them over by saying wars were not waged with light finger slaps. The less there were to oppose him, the sooner the war would be done.

But they did not know about this. For only Saiyon knew that the whole thing was bound up in a single phrase, the Sacred Flame. As his long legs churned forward at the head of his men he knew that the advantage was his in more ways than one. For he had outsmarted Satir from the very beginning. He had known that Satir had planted men in his court and camp to spy. It was natural. But what Satir did not suspect was that Saiyon too had spies. One in particular, who had more value than all the others put together. Fahed! Fahed, the only man known to have escaped the land of Masked People. Fahed, to whom Saiyon had promised the city of Satir's pride.

It was Fahed who had sent his swiftest runner flashing across the plain to tell Saiyon of Satir's decision and goal. So Saiyon had moved swiftly. And now he was coming toward the large hut set so easily for conquest. And so it was neither knew of the other's proximity until the advance scouts saw each other.

For an interval of a moment there was a stillness and lack of movement. Then, like a pair of animals bent on each other's destruction, the two groups sped toward each other, the cries of the warriors loud on the air, the swords and pikes gleaming in the sun. They came from around both sides of the hut. And in a moment they were locked in battle.

But within the core of Satir's legion, the rottenness of Fahed's treachery took root. Unknown to Satir, Fahed had trained his men well. And as the two forces fell upon one another, the midget swordsmen waited for the first clash before striking their colors and

turning to fight against their comrades of a second ago.

Yet, though Saiyon had all the advantage, Satir had the respect of his troops and of greater benefit, their will to fight to the death for him. For the first short minutes when the midget swordsmen turned against their comrades, the outcome was in doubt. Then Satir raised his great voice in a mighty shout and what might have been a rout became a recoil. And once more arms were joined, though the odds were all in favor of Saiyon. . . .

FOR an instant, consternation held Tar-Don and Ho-Gan in its grip. Even Queen Hammos had not expected Faith to act as she did. So they could only watch open-mouthed as Faith leaped into the belt of vari-colored flame seemingly suspended in midair.

"Wait . . . !" Tar-Don began.

But the words died in his throat at the result of her leap. The girl merged with all the colors of the Sacred Flame until nothing was to be seen of her. But though nothing could be seen of Faith, her voice was real, alive:

"See! I said there wasn't anything to it! Come on, Don."

Tar-Don took a single hesitant step forward and felt Ho-Gan's restraining hand on his arm.

"Listen!" Ho-Gan said. "Listen."

Tar-Don heard it then. The clash of arms, the shouts of men in mortal combat. Nor were the two men alone to hear. The Queen heard those sounds also. She stood tense, a tiny regal figure upon whose face a grotesque mask rode. Then slowly her hand came up, the fingers fumbling at the mask for an instant. But only for an instant. Then more surely and swiftly, they undid the fastenings and the mask fell to her feet.

The two men forgot the battle outside the doors of the hut, even forgot

Faith beyond the Flame. They could only stare at the child-like face of the Queen. They stared like children, seeing a something which they had heard of but never believed. That this supposedly cruel creature could have a face like this seemed beyond belief. Now when she spoke the relation of sweet voice with her face made sense.

"So they have found the way in," Queen Hammos said, her voice reflecting the sorrow she felt. "It had to be, was foretold it would be. Our guardianship is at an end—"

"Don! *D-O-N!*" Faith's voice was suddenly heard again. "Look at me."

There was such a compelling tone to her voice they felt bound to look. And this time she was to be seen. Her head and feet were seen clearly though the rest of her seemed veiled in color, yet there was no question that it *was* her.

"*It is she!*" Queen Hammos' voice rose in triumph. "The Goddess of Life. To your knees and pay her homage."

She was the first to follow her order.

"Please, Don," Faith called in pleading words. "There is something here you've got to see."

This time Tar-Don didn't hesitate. Ho-Gan was right behind as he leaped forward. He realized quite suddenly that the entire assemblage had gone to their knees. Tar-Don felt an odd vibration to his entire body as he reached the Flame. He had supposed there was no depth to the Flame, but as his impetus carried him forward he found that it had. Further, the vibration was increasing to a point where his whole body was shaken by it. Now colors floated before him in a whirling cone. Faster and faster the whirling cone sped until at last his senses left him, though his consciousness didn't.

"Don! Don," a voice called him back to life. "Are you all right?"

Don Homer looked up and saw the

beautiful, soul-stirring face of Faith Wayne bent over him.

"Why sure I am," he said, struggling to get to his feet. "You bet. And you?"

THERE was a curious light in her eyes. He creased his forehead in bewilderment. Why should she look at him that way? He wasn't nuts. She backed away a step and his eyebrows rose. Then he looked down at himself. Nothing wrong there. He was wearing the silly costume Pais had given him to wear. But what the heck was this pig sticker doing at his side. He hadn't worn that. His head arose swiftly and this time it was his eyes which asked questions.

"Look, both of you," a strange voice said. "The Masked People. They are fading from view—"

Don and Faith whirled at his words. Ho-Gan was right. Even as they watched the last of them, Queen Hammos faded from view. And like the dew on the grass still glistening in reminder of the mists, her words floated to them across the sheet of beautiful colors:

". . . The saying was true and our mission done. Immortality was a myth, as we were, a mirage. Only the good survive. It was said; 'That when one steps through who is pure, then the time for us to leave has come.' So into the hands of the woman and her friends is left the land which we have protected these centuries—"

As the last word fell onto the still air, the belt of color disappeared with the swiftness of lightning fading from view. The hut was empty of human and all else except the three before the trap-door standing open.

"Listen," Ho-Gan said. "The battle is fading. Which means one or the other is winning. Come, Tar-Don. Take the woman and let us seek escape down this tunnel."

"My name isn't Tar-Don, old-timer," Don said. "But your suggestion is all right with me. Come on, Faith."

"I will lead the way," Ho-Gan suggested. "The woman seems to desire talk."

The way was gloomy but the tunnel's roof was high and its width enough for two to walk abreast. Ho-Gan did not walk too swiftly and they followed in his footsteps, talking as they did.

"Don!" Faith began. "I don't know what this is all about. Maybe Pais has the explanation for all this. Maybe he's all at sea too. But I have an idea he knows what happened. Do you know that only, oh, about ten minutes ago, you were Tar-Don a warrior. I called you by name and you didn't know it. Further, this man you were taken prisoner with seems to know you from somewhere. I'm not the smartest gal in the world, but I have a pretty good idea of what took place. Little things that Doctor Raven and Pais talked about they didn't think I understood. I think they found a way to . . . Look! Remember the saying, 'from dust thou comest, to dust returneth'? I think they killed us and by using that Omegatron on us, made us return to life. Only not on Earth but in this place here."

"Okay!" Don said. "I'll buy that. But what about me? You said I was somebody else. How do you figure that?"

"I don't. I can only speculate. I think there is a body for all of us lying around somewhere. Call it what you want but I believe that. And, brother Donald, you are the proof."

"So how come I'm Don Homer now, Miss Universe?" Don asked, grinning from ear to ear.

"The Sacred Flame did that, my unpretty ex-football star," she said pertly. "Evidently my body is not on

this planet or wherever we are, so I came out Faith Wayne. See?"

"As good an out as ever I heard," Don admitted. "But now I think my pal, whoever he is, has found the Sesame."

DON was right. Ho-Gan had noticed long before that the trail they were following in the tunnel had a slight grade to it. Further, the tunnel roof was no longer as high. In fact when he arrived at the trap door at the other end, he had almost to stoop. He motioned with a shake of his head for them to come to his side.

"See," he said, pointing to a web across the crack which showed where the door fitted into the jamb. "It has been a long time since this door was opened. I may need your help. Together, then—"

The three of them heaved against the barrier, once, twice and a third time. Slowly, protestingly, it gave way and a crack of blue sky appeared. They redoubled their efforts. It opened more swiftly. So swiftly they tumbled forward off balance onto the green grass.

They looked about them and back to each other. There was no hut, no battling warriors, just a level plain and to their right the barrier of the thorn forest.

Ho-Gan gave the right answer: "The tunnel led straight through the forest. We came out on the far end. Good. Now all we need do is get a familiar landmark. Hah! I see it already. That huge boulder. We are not far from camp, by all that's holy. Come, Tar-Don. Nor can we leave the woman. The Knot of Six will want to hear her story. For surely they will want to know the great mystery I have seen."

"What's this Knot of Six . . . ?" Don began. But his question ended on a note of pain as Faith kicked him in

the shin. "Oh, sure," he continued sourly, as he gave the girl a look of disgust. "Let's see the Knot of Six. You go on ahead, pal. I got talkin' to do with my gal, here."

Ho-Gan's shoulders heaved in a shrug. Tar-Don's words didn't make sense. But nothing made sense since they had leaped through the Sacred Flame. Ho-Gan was not superstitious or religious, but he was not the sort to worry about things which were beyond his reason. He was a simple man, and in his way, a wise man.

"You'd better let him do all the talking," Faith suggested. "Just act kind of dumb. But I do wish you had some sort of memory of who and what you were before. From the way Ho-Gan talked, you were some sort of fighter."

"Well, this sticker at my side ain't for eatin' spaghetti," Don replied. "I just hope I don't have to use it, that's all."

There was no more talk until Ho-Gan came abreast of the boulder. Things happened quickly then. Men leaped from around it, seemed to spring from the very earth. In a moment the three were surrounded. But at sight of Ho-Gan the scowls changed to grins and the swords were put back into the scabbards. They gathered close about the three and hurled questions at them.

"No time now," Ho-Gan said. "I must get back to Saiyon at once."

"He has left the camp. Early," one of them said. "Tuman has been placed in charge."

A gleam of joy shone in the old warrior's eyes. "Tuman, eh? Good. Take me to him!"

The two men embraced and held each other off, their faces agrin with affection.

"So," Ho-Gan said. "Saiyon has recognized your ability at last."

"Not Saiyon. The Knot of Six," said

Tuman.

"Then he will not demote you when he returns," Ho-Gan said. "But I must get to the Knot. I have a wondrous story to relate."

Tuman gave Don and Faith a side-long look of curiosity but forebore questioning. He was going to be present when they told their tale, anyway. "He should be back soon," Tuman said. "Let us go now. . . ."

Ho-Gan understood. Saiyon might act differently. While Tuman was in charge his orders were in effect, Saiyon's.

THERE were six. That was why it was called the Knot of Six. Don and Faith were impressed. The Knot were not young men and reflected in their eyes was the wisdom they had acquired through the years. They sat on cushions in an immense tent and Ho-Gan and Don and Faith stood before them. Tuman stood to one side, his arms folded across his barrel chest, his eyes speculative and half shut. He was worried, frankly. For he could not bring himself to believe the story Ho-Gan had told the Knot. After all, the Sacred Flame was a legend old as time itself.

"You say, then, Ho-Gan," one of the Knot asked, "that the Masked People and the Flame disappeared?"

"On my honor, I swear," Ho-Gan replied.

Another of the Knot spoke up, bending forward as he did and peering closely at Ho-Gan as he did: "A true warrior's honor is a sacred thing. Something which he did not gain lightly, nor is it to be given lightly. And you say the girl has said that she and the one she calls, Don, come from another world. Yet this Don is Tar-Don, the son of the King of . . ."

He stopped and turned his head

slightly, his eyes questioning the sounds from without the tent. The others had also heard the commotion which had developed. There were shouts and the sounds of running men. Tuman, his hand on the hilt of his sword, stepped to the tent flap and parted it. The guard stood at attention as he stepped outside. Those within could see the stream of warriors coming at a run for the tent. At sight of Tuman they stopped short while from the main body some twenty of them came forward.

Ho-Gan shook his head for Don and Faith to follow, as he went to investigate. The three were just in time to hear one of the twenty say:

"We fought bitterly. But they were too many. Satir and his men won out. Our King, the mighty Saiyon is dead, as is Fahed, his chief. And with them three hundred of our men. We and those with us were lucky to escape. Oh, Tuman, let us make ready, for Satir will soon be on us."

Tuman spoke to Ho-Gan from the side of his mouth: "You were right, my friend. There was a battle. And Satir will seek vengeance if he did not find what he sought. It is quite clear now. Both Saiyon and Satir tried for immortality, for the legend said the Flame would grant it. Now Satir will try for it the hard way. We had better make ready."

They turned to go back into the tent to tell the Knot, but the Knot had come to them.

"We believe, Ho-Gan," one of them said. "Tuman was right. Prepare for battle."

Tuman issued orders on the instant. Ho-Gan's face shone with pride as Tuman made him his second-in-command. It was a signal honor for the old warrior. Already the trumpets were raising the alarm, and from the many tents, men streamed, buckling their weapons

on as they ran for the stockade where the banes were kept.

Don and Faith kept in the background. Don felt a tightness in his breast. It was a familiar feeling, like that just before the kickoff whistle in a football game. Suddenly he spoke.

"Ho-Gan! I don't know much about this game of war, but you can count on me all the way."

"Better stay to the rear, my friend," Ho-Gan said. "Battle is not for the beginner. The sword must be learned. Besides, the girl will need protection and I will not be at hand."

A smile dimpled Faith's mouth as she stepped forward and planted a kiss on the wrinkled skin of Ho-Gan. The old warrior flushed in embarrassment but a pleased smile showed he didn't mind.

"That's for the nicest thing ever said to me," Faith said. "And also for a keepsake in battle."

"Satir can only attack from one position. Saiyon chose his field wisely. Therefore I will send a couple of men to a safe spot with you. There will also be banes at your disposal should the tide of battle run against us."

The safe spot proved to be the crest of a high hill. It was like being in an observation tower. The whole plain stretched out before them. They could see the rims of the hills in the distance and saw then that the field of battle was a wide, shallow valley. The sun was no longer high, though still a ways from setting. The city of tents had been set up along the gentle slope of the near hills from the top of one they were watching. Satir and his army would have to come across the long plain from in front.

Nor had they long to wait.

IT WAS the most spectacular thing they had ever seen. The lances of

the advancing van of pikemen gleamed brightly, their steel tips pointing skyward. These were foot soldiers. After them came the long lines of swordsmen, some on foot but mostly on the terrifying six-legged banes. The standards waved smartly in the small breeze, and here and there, trumpeters dashed about, the brazen sounds of the horns plain to their ears.

Directly in front of them they could see Tuman's plan of battle. It was quite simple. Three distinct groups of warriors, one in the center and another on each flank. The center group held the largest amount of men for this was to be the core of battle. The flank guard was to make sure no enveloping movement would develop.

Now the voices of the armies came to them, a confused scream of maledictions and insults, shouts of encouragement and foretellings of victory.

"Don!" Faith suddenly screamed, grabbing his arm tightly. "Look. Pais! There, with that fat man."

Don saw him the same instant. They were riding side by side, directly behind the rows of pikemen. And in Pais' hand a sword gleamed brightly.

"Damn!" Don grunted savagely. "If that heel can use a sticker so can I. Besides, I've got a little score to settle with him. . . ."

"Now, Don," Faith cautioned, forgetting he didn't remember. "He didn't do anything to me. You came in time, remember?"

Don looked blankly at her. But he guessed something *had* been attempted, at the sudden flush to her cheeks. Anger gripped his throat so hard he couldn't talk. It dissolved from his throat but she could hear it in his voice:

"Funny, but I never liked that guy. Even when he dished out a check for a hundred grand. Now I like him less, the *lover* . . ." he mouthed the word in

disgust. "Stay up here, baby, till I get back. I'll have things to say then."

Tears came to Faith's eyes. It was a funny thing, but she had never thought much about Don during the week they had spent together except to know that he was a good listener and she had liked being with him. Now she knew that she always wanted him close. And a fear came to her that maybe . . . she shook the thought from her mind and stepped to his side.

"I'll be here," she promised. "And I'll be waiting for you. . . ."

A vacuous smile ringed Don's mouth after the kiss Faith gave him. He stared vacantly at her for an instant, before realization came to him of what she had done. His arms shot out, pulled her to him, and this time he kissed her.

"Baby," he said after releasing her. "That's just a sample. Stick around because your Donny boy's coming back for more."

THE battle was joined. The pikemen of Satir broke in their first wave but the second wave broke through. And after them came the foot soldiers and after them the mounted swordsmen. Don, riding full speed rushed headlong into the thick of the fight. Here, in the middle of it all there was no need for swordsmanship. It was strike and duck, if there was room. The clash of arms, steel striking steel, drowned out the sounds of men, the shrieks of the wounded and the dying murmur of the about-to-be-dead.

Don had glimpsed Ho-Gan beside the thick-bodied figure of Tuman in the forefront of the battle. They were his goal. For common sense told him they would be the goal of this Satir, and so would be the goal of Pais. And where Pais was, was where Don wanted to be.

Don had known the battle of the gridiron. He had fought with his hands

several times against one or another of fellows his own age. But he had never known the impersonal battle of life and death in a struggle of this nature. It was like being transported to medieval days. Here it was sword against sword, and give the bane two less legs and he would be a horse. A figure rose before him as from the very ground. The man's eyes were inflamed with passion and his mouth voiced a senseless stream of words. Like some mad animal the man charged at Don.

It was sheer instinct which made Don duck the straight thrust of the man's sword. The blade passed a hairbreadth from Don's throat. And once more instinct and reflex made the next play. Don shoved his hand straight out and like a winging arrow the sword sped straight for the other's heart. All the way in. The man's head went back, his mouth opened and a stream of blood poured forth. But Don didn't bother with him anymore. He had pulled the sword out, its slender blade red all the way to the hilt, and spurred his bane forward.

Now the going was rougher. Men were pressed together in an inextricable mass. There was room only for slash and stroke and a prayer that one would be lucky. From the first blow until he reached the side of Ho-Gan and Tuman, Don lived in a mad world in which nothing existed but death and blood.

The battle had swayed back and forth but always in the tide of Satir's favor. Don knew nothing of this. He was covered with blood from head to foot. His arms and legs were tired as they had never been. And here and there on his own body were cuts where some sword blade or other had nicked him. Luck had been with him all the way. Once, as he was fighting someone another made a pass at him from behind. But because the press was so

close the blade had somehow been deflected and only a flesh wound on the right shoulder had resulted. Another time Don had missed a stroke of his own. And once more luck had helped him. His opponent had jabbed his own sword forward. Only to miss as Don's mount slipped in a pool of blood. The other hadn't had a second chance. Don's own blade drank deep of the other's life blood.

But luck or not Don found himself at last beside Ho-Gan.

The old warrior must have had eyes at the back of his head. He didn't turn as he said:

"I thought I told you to watch the girl. We're outnumbered. And if Satir ever gets men behind us we don't stand a chance. Get back to her. Ride for the deep hills or the forest if that happens!"

"Can't," Don said as he thrust with his sword at a bearded warrior who suddenly interposed his body between him and Ho-Gan. "Got to take care of a friend I saw with this Satir fat man."

ONE of the paradoxes which sometimes occur on a battlefield happened then. A clearing appeared between the immediate battling forces. It was as if it came to be so that they could take stock of each other. The calm settled not alone on the field but also in the breast of Don Homer. Just ahead of him some ten yards were the figures of Quentin Pais and the one they called, Satir. He could see that they had not escaped unscathed from the battle. Each bore bloody wounds, though he could also see that none of the wounds were more than of the flesh variety.

There was more to be seen. Don looked about. Though here there was calm, not so elsewhere. The battle raged unabated everywhere else. None

gave and none asked quarter. It was slaughter or be slaughtered. He saw too that the battle was going as Ho-Gan said, not too well for the forces of Tuman.

And once more the battle was resolved, this time in a more personal way. For with a ringing shout Satir spurred his bane forward directly at Ho-Gan and Tuman. Nor was Pais a second behind. Satir's shout found an echo on Don's lips. Only his was the yell of the college days. Straight for Quentin Pais Don drove his mount. But again the press of men in the immediate foreground prevented him reaching his goal then and there.

Only Ho-Gan saw what happened. One of the enemy had fallen. And as Don passed the man shoved his blade forward in a dying thrust. It passed completely through Don front and back and upward into his heart. The sword was pulled from the dying man's hand by the plunge of the bane. And Don spurred onward as if nothing had happened.

So surprised was Ho-Gan by what happened he forgot the battle and his own personal danger. And at that very instant Satir reached him. There was a wild gleam of anticipation on Satir's face as he made the fatal thrust. Straight forward, too fast to be parried, came the sword. And into Ho-Gan's body it plunged. All the way. And with the expert's pull was hauled out.

Only Ho-Gan did not die. Not even an eyelid flickered in the old warrior's face. But in Satir's eyes, horror and understanding came to life. They were the last things to play on Satir's face. For quicker than the eye could blink did Ho-Gan act. His arm swept back and out and the sword was a shimmering steel bolt of lightning as it struck and sheared through the other's neck.

Satir's head fell from his shoulders,

the eyes still wide and even more disbelieving than before.

In the meantime Don had felt the sharp prick of the steel. He had felt the pressure of the blade's entry. And before him the whole blade disappeared. He reached down with his free hand and tried to pull it free. It wouldn't come. To hell with it, he thought. Gotta get to Pais.

But there was Satir in front of the other. Don reached the King's side just as Ho-Gan made the fatal pass. Satir's blood poured over Don in a crimson-black shower. And now Don was face to face with Pais. There was no fear on Quentin Pais' features as the two came face to face. Just a cold appraisal of a fact. Don Homer had achieved the immortality he had striven for and failed to get.

The evidence was in the blade still embedded in Don.

PAIS had been a fencer in his youth.

Don's first clumsy swipe missed Pais altogether and the second was parried with ease. Then Pais began a deliberate cutting attack on the other. A quick thrust here and another there and wherever the blade touched the flesh blood flowed in its wake. And all the while Pais maneuvered Don away from the rest of the fighting so he could work his will on him at his ease.

He succeeded at last. A quick parry of a last stroke, wilder than usual, and Pais' sword flicked out with a delicate movement of his wrist and Don's sword went sailing off into space. The two men looked at each other and Pais spoke:

"One thing, Homer?"

"Yeah . . . ?"

"Did you pass through the Sacred Flame?"

"Yeah, you quack. And I'm going to take you apart, bit by bit for trying

to make a pass at Faith."

There were no more words. Pais struck quickly then. Don was hit so hard he was knocked off the bane. And Pais sat his mount and looked with incredulous glance at the broken blade in his hand. It was as if the sword had met a steel block. And before Pais could recover, Don was at him.

Don dragged the other off the bane and began to hit him with short hard blows, each like the kick of an air hammer. Pais rocked back and forth under the punishing blows. But only for a while. Then he began to hit back. But he was playing Don's game now. Don's punches became more savage, more terrible. Pais began to bleed from the mouth and nose and gradually his face began to swell from the effects of the blows. A solid smash to the nose flattened it, and another broke half the teeth in Pais' mouth. A couple of jabs blackened both of Pais' eyes and at the end he went down under a terrific left hook to the jaw.

"Get up, you scum," Don said. "There's more in my fists for you."

Pais had fallen over his blade. He could feel the hilt of it close to his fingers, and a wild thought shot through his brain. Don was immortal. He had seen it. But what good was immortality if one had no legs? Quickly, Pais rose, even though the whole world swam in a red haze before him. The sword was gripped in his hand. A wild laugh of elation broke from him and Don stepped back a pace, wondering at it.

"Live, damn you!" Pais screamed. "Live forever. But see whether she'll like you without legs. . . ."

Don tried to leap aside. But the sword was swifter. Straight for his legs it sped. It touched them and fell to the ground. And Don stared in horror as he saw Pais literally fall into a small heap of dust—

ONCE more Don, Faith and Ho-Gan were in the tent where the Knot of Six were gathered. The elders sat silent, weariness on their faces. Death and destruction had never been to their liking. Now it was at an end.

"Ho-Gan," one of them said. "It is our command that you shall lead our people. That you shall from henceforth be called, King Ho-Gan."

The old warrior, leaning wearily on the hilt of his great sword, looked to each of them and nodded his silent thanks.

"As for the girl and man from the other world, we will leave it entirely in your hands as to their disposition."

"Very well, my wise friends," Ho-Gan said. "I am alone, without kin. Therefore I would take these as my children. . . ."

"Wait a minute," Don broke in.

"Not quite as my children," Ho-Gan said with a smile. He knew what was in Don's mind. "But to be treated as such. So that I may know the joy of grandchildren in my old age."

Faith blushed and Don grinned. They were standing side by side, their hands entwined. Don gestured for her to step outside.

"Okay with you, honey?" he asked.

She pulled him to her, for an answer. He straightened out after the kiss and said:

"Baby. That's for me. And how! What's more, all this through eternity."

And once more his lips were sealed with a kiss.

* * *

Quentin Pais felt that familiar stirring sensation. Soon it would pass and he would open his eyes and find himself back in the laboratory. He did. Raven's voice came to him:

"I had to bring you back. The boy and girl will be happier in that land wherever they are. Here they would

only know pain until they died. I have made my mind up. And here it is."

*THE SCALPEL FELT LIKE
FLAME AS IT SEARED PAIS'*

*THROAT. PERHAPS LIKE THE
SACRED FLAME WOULD HAVE
FELT. . .*

THE END

UNROMANTIC MOON

By H. R. Stanton

★ **T**HE moon is the subject of so much romantic balladry that even an astronomer is apt to forget how truly factual and colorless our satellite is—except in a scientific way.

The Moon-Earth combination is less a planet and a satellite than it is two planets, for the Moon is so big that it behaves as a second part of a twin planet system. After all, when the Earth is eight thousand miles in diameter and the Moon two thousand one hundred and sixty, you can readily admit that the planet-satellite relationship is a little out of place. We say the Moon revolves around the Earth but what is true is that both the Moon and the Earth revolve around a common center of gravity.

The Moon takes about twenty-seven and a quarter days to revolve around this point. And because it keeps its same face always turned to the Earth, it revolves on its own axis but once in that same time. The Moon wobbles around considerably in its rotation and we are thus able to see a little better than half its surface—about fifty-nine per cent. The rest is hidden of course—but only temporarily—wait for the rockets.

The mass of the Moon is considerably less than that of the Earth which tends to make the planet-satellite relationship a little more tenable. It weighs one eightieth of the Earth. And as we all know, the gravitational attraction is but one-sixth that of the Earth on the surface of the Moon. A three-foot jumper would fly eighteen feet into the air!

A cold and chilling facet of the Moon is the fact that its airless surface never changes under any sort of erosion. The only conceivable forces acting to work on the pumice-like material that composes the arid Moon's surface, are those of expansion and contraction under the alternate heating by the Sun's intense rays and the rapid cooling through radiation when the rays do not impinge on it.

Undoubtedly such change is the *only* change at all. No breath of wind, no plant life, no life of any kind—just bitter isolation.

A project of extreme interest these days is worth considering. It was suggested many years ago that if a rocket could be launched for just a one-way trip to the Moon, it could be loaded with a magnesium-liquid oxygen flare so that when it struck it would give out a frightful blast of visible light which could be seen on the Earth

almost without a telescope. Then it was also suggested that a rocket be loaded with white magnesium oxide which would be scattered by a small explosive charge so that it would make a mark permanently visible on the Moon's surface. From a practical standpoint these experiments would have little value other than that they would aid in gaining knowledge through the manipulation of the rocket.

But the boost to Man's vanity is tremendous. Imagine what a feeling of satisfaction it would be to launch any sort of a projectile at all toward the Moon!

And it is now entirely within the realm of probability. We may expect to see results of that kind in the not too distant future. It will be a remote-controlled machine patterned after the V-2 and driven by liquid hydrogen and liquid oxygen. We'll see it, that we know, in our lifetime—and a good deal less. The Moon's craters are naturally extremely fascinating from a speculative viewpoint.

What violence, what destructive forces caused these monstrous holes? Everything from volcanic action to meteoric action has been predicated, but the truth is still obscure.

One of the commonest observations performed on the Moon is the measure of its temperature which is done by means of a supersensitive thermo-couple. The thermo-couple is an electrical thermometer. It consists of two dissimilar wires joined together by a weld. When the junction of the wires is heated, a small voltage is generated between the ends of the wires. With the aid of amplifiers this minute voltage can be readily interpreted in degrees of temperature—or minute fractions thereof. When it is understood that such a thermo-couple is able to measure the heat of a candle at a distance of better than a mile, an appreciation of sensitivity is gathered.

During Lunar days it is revealed that the average temperature of the Moon drops to something like two hundred degrees below zero, while in direct sunlight it is hot enough to boil water. Such an environment is hardly conducive to producing anything but drabness.

Nevertheless, in its hard, barren way, the Moon possesses a certain beauty, a beauty cold and austere, hardly appealing to any part of our weaker natures, as Russell has it, but coldly and clearly enchanting.

* * *

MIDGETS and

By **LEE FRANCIS**

One question haunted John Kindred: What mad mind had created the plague that was changing men into monsters?

I stood in the long aisle, staring at the distorted things that once had been normal men . . . and I could see the agony on tortured faces . . .



MIGHTY MEN

IT WAS five-fifteen when I left the *Telegraph* city room and caught a yellow cab. The cabby tried to talk himself out of driving me out to Mount Mead Hospital.

"Listen Doc," he argued. "I gotta stay downtown. My motor's on the fritz. Might not get us out . . ."

"I'm not Doc," I said, "and I know some of the answers. You want to stay downtown because you can make more money on short hauls during the rush hour. I'm a reporter and I'm going to Mount Mead. I'm going in your cab."

He snorted something I couldn't make out, jammed the gear shift into



low and pulled swiftly out into traffic. I was grinning and he saw my unlovely face in the rearview mirror.

"Okay, wise guy. Have it your way," he said.

He missed a streetcar by a fraction too trivial to be calculated. He went through two red lights and thumbed his nose at a copper. You guessed it. The guy was plenty sore.

When I paid him off at Mount Mead, he hated like poison to give me any change for a five-spot. I waited until he dug out six-bits, a dime and a nickel. I pocketed the change without tipping him and went up the broad, sandstone steps to the hospital.

I wasn't in a very good mood myself. The *Prophet*, otherwise known as Howland Briggs, City Editor of the *Telegram*, had sent me out for an interview with John Kindred. Kindred was a member of the staff at Mount Mead and author of the latest best-smeller, "The Balance Is Broken."

I didn't like the assignment. I'm very healthy myself, and barring accidents, hope to stay that way. The worst sickness I ever suffered was measles at the age of five. I'm short, not exactly good looking with a broken nose that set itself, and a mass of red hair that frightens small children until they scream for their mothers.

I went into the marble lobby and headed for the snub-nosed nurse at the switchboard.

"I want to see Doc Kindred," I told her.

She looked me over and reached a quick decision.

"Doctor Kindred is busy. He can't be disturbed."

"For how long?"

I didn't like her. She had dark eyes that flashed fire. I guess she figured me for one of Kindred's poor relatives.

"He's busy for the entire afternoon."

"Okay," I said. "If that's the way you want it."

She went back to her work and I wandered over to the elevators. I waited until one came down with a woman carrying her baby. She was followed by someone who looked like her husband, because he had that halo around his head that new fathers always get when their first offspring enters this cruel world.

I smiled at the nurse who ran the elevator.

"Take me up to Doctor Kindred's office."

She gave me the fishy stare.

"Doctor Kindred is on the fifth floor. I run past it. No visitors on five."

She was a stiffly starched little thing, but I saw the humane look in her brown eyes.

"Look," I said, "I'm going to the fifth, on this elevator. You going along?"

She decided she was. When I got out on the fifth floor, she went back down in a hurry. Probably decided that her name was mud, from then on.

I WALKED along the hall. It was wide and long. There were a lot of impressive looking walnut doors with names printed across them in gold gilt. I found one that read:

Dr. John F. Kindred

I knocked.

"Who is it?"

The voice sounded so tired that I felt sorry for its owner.

"Me," I said, and went in.

An old gentleman was looking at me over the desk, from behind silver rimmed specs. He must have been well over sixty. His hands, visible against the dark covers of a book, were long-fingered and fragile.

He spoke again, with just the ghost of a smile on his lips.

"And, who is *me*?"

I shook my head.

"I'm the great unknown," I said.

"I'm the guy who writes the headlines for the world to read."

It was a cheap sounding thing for a man to say, but it was the truth and that's the stuff I deal in.

"Oh!" he said. He put the book down and scratched his chin. I was to remember that habit. That single long finger without any blood to color it, tracing a furrow down the left side of his chin.

"I suppose the *Telegram* wants something to print about my book?"

My eyelids went up just a fraction.

"*Telegram*?"

He smiled again.

"I know you," he said. "I've seen you around."

Kindred was nobody's fool, I decided. I drew out my billfold and gave him my card.

"To prove that I'm not an imposter or an autograph hound. I don't suppose they bother you much, up here."

That smile, soft, almost gentle.

"You managed to beard the lion in his den," he admitted. "What is it you want to know?"

I wasn't sure. The *Prophet* had asked for a feature yarn on Kindred and his book. I had read some of it the night before. "The Balance Is Broken" was a screwball thing that only a doctor could fully understand. Something about the balance of size being broken. How midgets and giants were starting to appear in great numbers. How it might affect the world. Personally I hadn't seen any giants lately, and the only midget I know, sells papers on the corner of Ninth and Grove Streets.

"Give me some hokum about the book," I said. "How you came to write it—what you eat for breakfast—how

you keep from turning into a midget or a giant."

I'll admit I wasn't showing much respect for the old gent, but I don't go much for pill peddlers.

More blood than I thought his heart could pump suddenly colored his cheeks.

"You don't believe the facts I've set forth in my book?"

I guess I grinned a little at that.

"Look, Doc," I said. "Just between you and I, what you sell the public is your own business."

THAT didn't go over so hot with him. I thought he was going to toss me out. Not that he'd have to try very hard. I was changing my mind about him even as I talked. If he'd said "scram," I'd have faded out of his life. He was on the level and I knew I'd opened my mouth too wide.

"If I proved that the book has a solid foundation on truth, would you help me? Would you champion my cause?"

He had me there. Something about Kindred made me *want* to help him.

"Look," I said. "I'm a dope. I'm a thirty-dollar model marked down to twenty-two-fifty. I don't believe in anything. On the other hand, I'm a sucker for guys who are on the level. I came here for a gag story. Now the story has *me* gagged. If you can convince me, *and* I can convince the *Prophet*, I'll sell your stuff. The *Telegram* stands behind me on most everything I tackle."

He nodded thoughtfully.

"Who is the *Prophet*?"

I grinned.

"Just a monicker for Howland Briggs, the best editor this side of Hades."

He kept right on thinking, and his finger crept up and scratched at that chin once more.

"I read some of your stories on the Williamson Case," he admitted. "You're a fellow trying to cover up a soft heart with big words. I'm going to show you something that will shake you from the ground up. After that, I'm going to let you leave here without a word. Use your own judgment."

That business about me being a softy at heart really hit the bull's-eye. Dad always used to say that I had a steel-coated finish over a baby-blue heart. Kindred was hitting pretty close to the belt.

He took a small key out of his desk and arose.

"Let me warn you that you can't publish a word of what you see, at least, not yet. The public isn't prepared to withstand the shock. People would seek comfort in disbelief. They'd call you a liar, and brand us both as fools."

He went to the door, turned and continued:

"Later, perhaps the world will be ready to accept the truth. When they are, God grant it, we will be ready to help them."

I was beginning to get excited about the thing. Why Kindred first chose me to bear the cross, I don't know. Somehow, though, I had decided that this wasn't phony. It was the real thing and I wished heartily that I had read more of Kindred's book.

I followed him down the hall. There was a big steel door on one side, without any lettering on it. He opened it. There were wide stairs leading up toward the sixth floor.

"The elevators no longer run to the sixth," he said. "Those few doctors who are allowed up here, possess keys which they swear not to let out of their possession. Our secret cannot be betrayed."

My heart started beating in three-quarter time. I smelled medicine. I

followed him up to a small balcony. He produced the key again and opened the door to a long, wide ward.

I took three steps into the ward and stopped short.

I opened my mouth and it stayed open for a long time before I thought about closing it. Kindred was watching me and I was watching the horrible collection of freaks on the hospital beds.

"Take hold of your nerves, man," Kindred cautioned. "Walk the full length of the ward with me. Look all you want to. They are harmless. Don't talk. They are sensitive to sound. It's very quiet up here."

IT WAS. The sounds of the street were gone. White curtains masked every window, so that light could come in, but you couldn't see out. The beds were white. The floor was spotless. It was as clean as—Heaven.

It wasn't the silence or the color scheme that bothered me. I seemed to float along, without knowing that my feet were carrying me. I felt suspended in space—and frightened.

The man in the first bed was quite young—about thirty. His body wasn't bloated. It was just big all over. He wore a hospital gown and I'll swear before a jury that he was eight feet tall. His legs extended beyond the foot of the bed, propped up on some cushions on a chair. He stared at me and he smiled sleepily, vacantly. I had never seen a man so huge. Yet, I knew it wasn't healthy. He appeared very weak. He could hardly move.

The next bed contained a woman, maybe forty years old. She was in pain. Her features—her build, were normal. She was normal, that is, in proportion. Actually, she wasn't over thirty-five inches long.

"THE BALANCE IS BROKEN."

I'll say it was. I started to get an en-

tirely new conception of Kindred's book. I wanted to apologize to him. I couldn't say anything. I kept walking, kept seeing in each new bed, a less or more serious change in a human body. These people had not always been dwarfs and giants. They had been normal. There were over a hundred of them in the ward. A hundred souls suffering both from pain, and from the terrible mental change that must have taken place within them.

Near the far end of the ward, we met a nurse. She was a lovely girl, I thought, as I stared at her for the first time. She had deep brown eyes protected by long lashes. Her complexion was creamy. Her very red lips opened slightly as she stood before me.

Kindred gave her a tired smile.

"I'd like you to meet my daughter Joan."

I took her hand. I wondered how she had the nerve to face this mess. It didn't amaze me to find that she was Kindred's daughter. This was exactly the kind of work she would want to be doing, if she was like her Dad. I said:

"I'm very glad to meet you. Your father has succeeded in jarring me out of a nasty little rut I was in."

"I'm glad," she said simply. In those two words she put warmth and real understanding. "We've been fighting alone for so long. Perhaps you can help."

A sudden roar of pain came from the far end of the ward. Joan Kindred hurried away. I wanted to follow her. The sound of that cry frightened me. It was angry—unnatural.

I watched her as she went to the bed of the giant at the end of the line of beds. I saw her take the hypo from its case and jab his arm. When Kindred finally took me out, she was sitting beside the bed stroking the man's forehead. He was moaning like a sick child. I would have liked her to stroke my

forehead. It might relieve the headache I had just then.

HOWLAND BRIGGS, the *Prophet*, isn't very sympathetic with screwball reporters. However, I don't approach him with new or startling plans unless I know something of what I'm talking about. I sat down on the corner of his desk, swinging one leg. After a while he looked up from under his eye shade. Howland has gray-green eyes that look right through you. His chin is sharp, and his face, having already served him for fifty years, shows a lot of age and worry lines.

"Well?" he said shortly, "If you got it, write it."

I grinned.

"I got it," I said. "But I can't write it—not yet anyhow."

He was busy again, checking copy for the Five Star Edition.

"Bosh," he said.

"Let's go down to the bar."

"Haven't time."

This was an old line with us. He knew just what I was going to say next. I said it.

"I got a headline, but I can't let them set it."

He responded as I knew he would.

"Guess I *am* thirsty."

He got up, stretched his lanky six feet and removed the eye shade. I followed him down the hall to the elevator. Followed, because my five-foot nine inches can't keep up with Howland on the straightaway.

We didn't say much until the third beer was half gone.

"Well," he said, "Spill it."

"The beer?" I asked.

He frowned.

"The story."

I told him all about what happened to me out at Mount Mead.

"Kindred tells about this change tak-

ing place, in his book," I explained. "He tells it as something that *may* happen. Actually, it *is* happening. Certain glands are drying up, Kindred tells me. There has to be a cure. There's a cure for everything, somewhere, if you look far enough. Trouble is, Kindred is working alone."

The *Prophet* thought for a long time. Then he cursed quietly.

"Unless you've been drinking more than I think you have, we've got the biggest story the *Telegram* ever handled."

"And can't use it," I added.

He swore again.

"So you promised in the name of the paper that you wouldn't release the story. I suppose you think you did exactly the right thing?"

He sounded so damned high and mighty that he made me sore.

"I did," I snapped, "and you're not running a line of what I told you, not while I'm still breathing."

The *Prophet* grinned. It was sour and lopsided.

"You know me better than that," he said. "Tell Kindred that we'll publish exactly what he wants us to. Tell him I said that the *Telegraph* will donate as much money as he needs to carry on his work. He's to give us the first break when the story comes to a head. Does that suit you?"

It did. Briggs wasn't fooling. He didn't own the paper, but he handled it with a rich man's dough, and he had the key to the cash box. I felt a little sentimental for a minute.

"The first symptoms of the disease, or whatever it is, shows up in a high fever and heavy beating of the heart. The people who have these symptoms usually rush to their doctor right away. Mount Mead has warned doctors to rush these cases to the special ward. So far, they've kept it quiet."

He had forgotten the beer.

"Kindred wants me to scout around," I said.

The *Prophet* kept on nodding.

"I got some ideas," I said. "How about releasing me for a week or two, for a little snooping?"

The *Prophet* grinned at me.

"You solve a murder case or two and right away, you're a mental giant."

I was sober, though. This wasn't any joke.

"Well," he said, "It's the craziest thing I ever heard of. I know Kindred and I know Mount Mead. Everyone out there is dependable. If you can work with Kindred, go ahead. Report in at the end of the week. Call me if anything comes up."

He got up and walked out of the bar. I sat there for a long time, trying to think of a place to start. The more I thought, the more I figured I was Little Red Riding Hood, lost in the big dark woods. I had about as much chance tracking down that disease as Jonah had getting out of a whale—if there ever had been a whale.

THE intern with a hair growing from a mole on his chin, put the bag down on my desk.

"Doctor Kindred told me to turn this file over to you," he said. "It contains all the material you asked for."

I thanked him and he left. I had a two-by-four office on the fifth floor of the hospital. It wasn't quite up to par with the other offices. I suspected it might have served once as a linen closet. I didn't have my name on the door. I didn't want it there.

I opened the case and took out a dozen sheets of paper. They were covered with names and addresses. That was all, except that this list covered every malformed creature who suffered on the floor above. It was the list of

those people stricken by the strange malady.

I was working on a little idea of my own. I didn't dare tell Kindred what I was thinking about. I asked for the list and got it.

For five minutes I studied the group of names. On the second page, my thoughts were abruptly punctuated by the most horrible scream I had ever heard in my life. It came from somewhere on the floor above, and it started low, covered all the notes to the top of the scale and faded into a low, terrible growl.

If you combined Leo, the Lion, and the wail of a fire siren, you'd hit it pretty close. I scattered the list on the floor, getting to the door. Kindred was ahead of me, running toward the door that led to the next floor. I caught up with him as he unlocked the door. We went up on the double. I don't know what I expected to see.

But it wasn't the slim bladed surgeon's knife sticking upright in the chest of the giant on the first bed.

JOAN KINDRED was there when we arrived. Tears streamed from her eyes. The girl had courage. She didn't even care if a murderer had been there a few minutes before. She was sobbing because life had at last been drained from the man on the bed.

We all started talking at once. Kindred removed the knife, and I cautioned him to use a sheet in doing it. I didn't want to lose the prints. The other patients were excited in a drugged, sleepy sort of way.

"Who the devil had a chance to get in and out of here?"

Kindred seemed for the first time to awaken to reality.

"My God—someone—from outside."

Joan's voice quavered as she spoke.

"Honestly," she said, "I don't know

how anyone could have escaped before I came. I was in the laboratory at the far end of the ward. I heard him cry out. It didn't take over fifty seconds to reach the ward.

"I saw—only the knife."

"No one came down the stairs," Kindred said.

I was remembering the little balcony at the top of the stairs. I opened the door and went out there. The balcony overlooked the garden, six floors below. I tried one of the windows. It was the French type, pushing open easily. Joan and her father came and stood behind me. We looked down through six sections of steel fire escape.

I kneeled and studied the spotless white paint on the sill of the window. There was a tiny, black smooch. The same mark synthetic rubber makes on a clean floor.

"That's where your murderer escaped," I said. "He's had time to get out the back gate. He's done a neat job, with a weapon that you can only trace back to one of the hospital operating rooms. If my guess is correct, there will be no prints on the knife. You can't hang a man because he left a black smooch on the window sill. That, however, is the only clue. You can't call the police, or stir up a fuss. If you do, the whole story will be out about this secret ward. The murderer did some very nice figuring. He knows all the answers."

Kindred made a hopeless gesture with his hands.

"You're right," he admitted. "For the present, the body will have to be placed quietly in the morgue. Nothing can be said beyond the walls of Mount Mead. There is no other way."

I shook my head. I was getting stubborn about the whole deal.

"The murderer didn't figure on me," I said.

DOWNSTAIRS, in the linen closet.

I called my office, I went carefully over that list of names. The man with the knife in his chest was Carl Finch—1138 Fletcher Drive, City.

That was my first stop.

For reasons of my own, I didn't ask Kindred many questions about his patients. I'd rather find out for myself. To begin with, John Kindred was a doctor and research man. I, on my Sundays off, was a more or less lousy private sleuth. I didn't ask the same kind of questions that Kindred did, and I didn't seek the same answers. I wanted to find out everything I could about the late Carl Finch.

1138 Fletcher Drive was a pretty decent sort of place. Super modern, it was made of stucco with a lot of glass block windows. I decided on a direct approach, rang the bell and a maid in a black skirt and white apron opened the door. She was young, sleepy looking, with a too red mouth and eyes that told you one thing while her voice told you another.

"I'd like to speak to Mrs. Finch," I said.

She smiled.

"There isn't any Mrs. Finch," she said.

I had bungled that one badly. It hadn't occurred to me that Carl Finch might not have been the marrying type.

"Oh?" I said. "Well, I'm from Mount Mead Hospital. I wanted to contact some of Mr. Finch's relatives."

At the mention of Mount Mead, her eyes opened wide. Her lids fluttered. She grasped my arm with tense fingers.

"Carl—Mr. Finch? He's all right?"

I stepped inside, so that she had to retreat ahead of me.

"He's dead," I said.

I thought she was going to pull a faint. She tottered back on her heels, then got control of herself and stood

her ground.

"I'm—I'm sorry," she murmured. "I said there isn't any Mrs. Finch. She was killed last week. An automobile struck her when she was crossing the street. Outside of her, there are no more relatives. No one cared if he lived or died."

Death strikes twice, I thought.

This girl was taking Finch's death pretty hard. I wondered why.

"How come you're still working here—alone? You still on the pay-roll?"

Her face turned a nice pink.

"That's none of your business. I'm staying here until Mr. Finch's estate is taken care of. He left orders to keep the house cleaned up until he came home."

"He didn't know that his wife was dead?"

She shook her head.

"Then how could he give you all these instructions?"

WE WERE standing in the hall. An open staircase climbed upward to the second floor. She had hold of the stair rail and her knuckles were white because she held it so tightly. She was frightened and she was gradually catching herself in her own trap. I wasn't sure what the trap was, but I was sure that this babe wasn't on the level.

"It ain't any business of yours," she said at last. "You get out of here right now. How do I know Mr. Finch is dead? Maybe you're just waiting for a chance to hit me and rob the house."

I drew a card from my pocket and she looked at it. Her eyes narrowed.

"I don't want no trouble with a reporter."

"And I'm not looking for trouble," I said. "Maybe we better sit down and talk things over—carefully."

She sighed.

"Come on."

Rosa May Bronson, that's the name she gave me, had been employed by the Finch's for six months. Mr. Finch had been stricken with a high fever a month ago, and they had rushed him to Mount Mead Hospital. They hadn't seen him since. Mrs. Finch was away every night. One night she didn't come home. The next morning the police came and said she was at the morgue. She had been killed by a hit and run driver on Walsh Blvd. That was seven days ago.

Mr. Finch's lawyer called. He told her that there were no other relatives, according to the information he, the lawyer, had. That Mr. Finch could not be notified of his wife's death, for the present. He advised the maid to stay in the Finch home and keep it in order until Carl Finch could be interviewed.

"And that's all of it," Rosa May ended. She was sobbing into a handkerchief. "Now Mr. Finch is dead, and I'm just waiting—but who for—*what* for?"

She sat opposite me, and her dress crept up to expose some pretty, well shaped knees. The knees were pretty evident, but she seemed not to notice. She regarded me with grave, tearful eyes.

"What would *you* do? I don't have anyone to depend on."

It was a badly worn old line, but not bad when coupled with her eyes and slim figure. Rosa May Bronson had enough attributes to get her by in this cruel world.

"I'd look for a new sugar daddy," I said, and stood up. "It's getting pretty stuffy in here."

She swore at me softly.

"You ain't got one heart."

"Finch had one big enough for both of us," I said. "He kept you around for a long time. Probably he left some

cash for you in his will. Faithful servant and all that."

She was on her feet, eyes bright with eagerness.

"You think he might?"

Then the eyes clouded and I stood there grinning at her.

"Why—you—dirty. . . ."

"Okay," I said. "You asked for it."

I went out into the hall. She followed me. Just as I reached the door, I thought I heard footsteps upstairs. I hesitated, looking back at the girl. She heard the sound also. I was sure that she did. Yet, she wasn't frightened by the sound. She was frightened of *me*.

"Got company?" I asked.

"Snob," she snapped. "That's the cat. He's—noisy."

"Yeh," I said. "Yeh, he sure is."

I went out.

A WEEK consists of seven days, which manage to tangle themselves together terribly when there's work to be done. By the time the next day of rest came 'around, I'd covered every name and address on Doctor Kindred's list—and learned just two things.

Every man and woman on the list had come from somewhere in the neighborhood of 1138 Fletcher Drive. Second—there were half a dozen new patients coming into Mount Mead each day now, and the hospital couldn't keep its gruesome secret much longer.

On Sunday afternoon, I sat in Kindred's office with Kindred and Joan. I had a lot of admiration for Joan. I knew how tired she was, and yet how cool and lovely she managed to remain, through it all. I wondered why I couldn't have been tall and handsome.

We had been talking about the rapid increases in the cases.

"I can't understand it," Kindred said. "The disease doesn't seem to be

a type that would carry from one person to another. When the fever breaks, there are no open sores or infection. Just—that horrible—change of size.”

I saw Joan shudder.

“That serum you use isn’t a cure, is it?” I asked.

He shook his head.

“No! It isn’t really very successful. It dopes the patient and makes him rest. However, it also takes away his strength. If we didn’t control those—those giants, no telling how much trouble they might make. So far, that’s all I’ve been able to do.”

“Maybe you ought to call in more experts,” I suggested.

He looked startled.

“Did you have the impression that I was working alone?”

Joan broke in.

“Dad’s secretive only because he doesn’t want the public to know. There are a hundred men of science and medicine, throughout the country, working with us.”

I felt like a chump.

“You—haven’t traced down anything important yet?”

Joan was addressing me. Every time she spoke to me, it made the blood rush into my face. She had a way of catching me off guard and making me into a befuddled halfwit. I just sat and perspired when she was around.

“Could the disease be man made?” I asked Kindred suddenly. “Could it be injected into a man or woman, by someone deliberately trying to cause this horrible trouble?”

Kindred looked stunned. Joan shot a disappointed glance in my direction.

“It’s possible,” Kindred said slowly.

“Surely you don’t believe a human being would be capable of such a crime?”

Joan had interrupted us.

“Haven’t you been reading dime

novel stories? Perhaps imagining a few of your own?”

I felt damned foolish talking the way I was, but I’m stubborn and I’ve got a one track mind.

“Maybe I’m batty,” I admitted to them both. “Don’t pay any attention to me.” I was thinking of the knife in Carl Finch’s back. I was thinking of how Mrs. Finch died a few days before her husband was murdered.

“The murder has me puzzled,” Kindred said, as though he had been reading my mind.”

“Yes,” I said absently. “Maybe Rosa May knows more than she’s telling. Maybe the cat *wasn’t* a cat.”

“What?”

I came out of the trance. I stood up. They were both staring at me with amazement.

“Bats in my belfry,” I explained. “I’ll see you both tomorrow. Need some rest.”

I left Mount Mead.

“PAPPY” REESE has had charge of the *Telegraph* morgue for more years than I’ve been alive. There are two kinds of morgues. One of them is for filing dead bodies on ice. The other is used for filing news stories, pics., and stuff handy to a going newspaper. I prefer the second kind. Ours is hidden at the back of the building, where filing cabinets tower over your head and Pappy Reese rules the roost.

I went in to see Pappy. He came out of the darkness, peering at me with watery eyes behind dusty specs. He didn’t have many teeth.

“Hello, Wonder Boy,” he said.

I made a pass at him.

“Pappy, ever hear of a guy called Carl Finch?”

I could almost hear the wheels on Pappy’s head start whirring. They might have been a little rusty, but

Pappy usually hits the jackpot on the sixty-four-dollar question.

"Carl Finch," he said, and repeated it over and over. "Now, let me think."

He scratched his grey head and shuffled away down the lines of cabinets. Over his shoulder, he said:

"There *was* a Finch. His name wasn't Carl. Kicked out of Mount Mead Hospital back in twenty-nine. Illegal practice."

He stopped and opened a file, having reached his alphabetical destination.

"Couldn't be the right one, though," I said. "This Finch didn't h. . ."

I stopped short. I had been about to say that Carl Finch didn't have any relatives. How did I know that? I had taken Rosa May's word for it. Now, wasn't I an intelligent moron?

I waited while Pappy Reese brought out a heavy manila envelope. On it he had written:

"File—Richard Finch Versus City Medical Board."

He placed the envelope on the table and spilled out some clippings. There was a news pic., a couple of front page articles, and some smaller stories, evidently written as Finch faded from public life. I read them all over quickly. Richard Finch had made a nice chunk of cash on the side, to the disgust of the upright city officials (the story said). He had been kicked out of the medical profession. Had lost his license. Finish—for Richard Finch.

Not much. Nothing to connect him with the murdered Carl. I looked at the pic. once more and nearly shouted.

There was Doctor Richard Finch leaving the courtroom during his trial. At his side a woman walked, her beautiful face cruel with anger. It was Rosa May Bronson, Carl Finch's maid.

Only the line under the pic. said she wasn't Rosa May Bronson at all, but, "Mrs. Richard Finch, who stood by her

husband faithfully throughout the trial."

That did it.

I visited Shelton Brothers, the lawyers who represented Carl Finch. They didn't talk much, but they guessed it wasn't any secret that the Finch estate had been quietly settled, leaving the home and fifty thousand dollars to Mr. and Mrs. Richard Finch who now resided in their brother's home.

So—now I knew that Richard and Rosa were husband and wife. I also knew that I was the prize sap of the century. It had taken me a week to dig up information that Pappy Reese could have supplied within twenty minutes after Carl Finch died. Well, I guess that's how it goes.

AT TEN-THIRTY that night, Joan Kindred phoned my apartment. If I'm any judge of women's voices, she was scared stiff.

"I must see you right away," she said. "Father's running a high fever. He's out of his head. Come as soon as you can."

I got her address for I hadn't been at the Kindred home before. Then I said goodbye, caught a cab and told the driver to drive like hell. He didn't spare the horsepower and we pulled up before a modest English bungalow on Parma Street, just ten minutes later.

Joan met me at the door.

"Doctor Joad is already here," she told me. Her eyes were deep set and dark with lack of sleep. She led me in. I tried to remember Doctor Joad. He was a white haired, decent kind of chap who had been working for some time, with Kindred. Joan led me upstairs without another word. Kindred, lying in his bed, looked very bad. He kept murmuring something over and over. None of us could understand.

"He's been talking like that for some

time," Joad said. "I'm afraid he's contracted his own disease. Been working with it too long."

I didn't like that. Joan sat down. Her eyes kept shifting from one of us to the other.

"Doctor Joad knows nothing of your work on this—this disease," she said. "I think it time he learns what we know."

Joad looked at me with watery, puzzled eyes.

"I don't think I understand?"

Joan spoke directly to me.

"You said some very odd things to Dad and I, remember?"

I nodded, not trusting myself to speak.

She arose and went to the window. As she walked, she spoke mechanically.

"Father retired at eight tonight. At nine-thirty I thought I heard sounds on the porch roof above the library. I blamed it on bad nerves. Everything was quiet after that. When I came in to say good-night, he was in a coma. The window was open. *He never sleeps with it open.* I remembered what you said."

Her breath was coming hard. She was badly frightened. I caught up with her as she pulled the curtain aside.

"I—haven't touched anything," she said in a low voice.

On the edge of the sill, just a foot above the porch roof, was a clear, sharp black mark on the white paint. I dug some of it off with my nail. It smelled like composition rubber.

"I guess the police should know about this," she said.

WHEN I saw Kindred the next day, it had happened. His facial expression was pinched and tired. He was awake, staring at me with frightened eyes. His entire body had grown much smaller. Doctor John Kindred

had changed overnight into a midget.

I talked with him for some time and his mind was clear.

"Joad knows all about it," he explained. "I explained that there is no cure thus far. He can prevent me suffering any great pain."

I watched him shudder.

Giants and midgets, I thought. Giants and midgets.

"You didn't notify the police?"

He shook his head.

"Joan wanted to. I asked her to wait. There's a chance that we may catch *him*. Perhaps we can force him to give us a cure. If the police handle it, he'll have time to escape. Everyone will die."

I nodded.

"Give me a few days," I said. I took a deep breath. "Did you ever know a man named Richard Finch?"

He shook his head.

"Only Carl Finch, the man who was murdered. Never heard of *him* until he entered the hospital."

Wrong number, I thought. Try again.

"Have you ever heard of a disease even remotely like this before?"

"Never," he admitted. "Last night I slept soundly. I wasn't aware that anyone entered the room. The needle must have done a swift job. I didn't awaken while he was here."

"The—the man—or woman, *did* use a needle?"

"Joad found the mark on my arm. It's so tiny you'd be apt to miss it. No pain where it entered. No swelling."

Anyhow, I thought, I've got something to work on now. I tried to say something that would cheer him up. I said I'd call him in the evening, and let him know what I'd accomplished.

He took my hand.

"You're all right," he said. Tears gleamed in his eyes. "The thing had

me fooled. You were the one who realized that it wasn't a disease at all, but the result of the work of some fiend. God speed."

Downstairs, I met Joan. She looked fresh and more at ease this morning. She took both my hands in hers and smiled up at me.

"I don't think I ever told you what a grand person I think you are."

I'm afraid the color of my face spoke volumes.

"It—isn't much," I blurted out. "I'm doing what I can."

She was standing too darned close to me. I felt funny all over.

"You're sticking by Dad and I when I don't know who else we could ask for help. I—appreciate it more than—I can express."

She leaned forward on tip-toe and kissed me softly on the cheek. I felt as though the fever had hit me.

I tried to say something, and only stammered a lot of meaningless words.

"I—that is—thanks—I'll try. . . ."

Then I made a run for it. I felt like a damned fool. Why didn't I sweep her into my arms and cover her lips with kisses? Why didn't I whisper sweet, sentimental words in her ear? Bunk, I thought. You're just a guy who loves a girl. You'll never make material for a love story.

I wandered three block in a mental haze. I swore solemnly that I wouldn't wash my face for a month. No—not until Joan kissed it again. Then I realized I had to get my feet down on the ground and start out to justify her faith in me. I felt like St. George starting out to slay the Dragon.

It occurred to me twenty minutes later, as I paid off the cab driver a block from 1138 Fletcher Drive, that I'd be damned lucky if I escaped being slain *myself*. Probably by something a lot less romantic than a dragon.

FOOLS rush in where Angels fear to tread. I knocked on the door. This time, Rosa May Bronson, or Finch, came to the door without the maid's uniform. She was dressed for the street, in a light sport coat and a small, brown felt hat. Her face colored with anger when she saw me.

"Well, if it isn't Wonder Boy," she said.

She caught me with my guard down. A few years ago, I managed to blunder through a couple of pretty decent murder mysteries, and was promptly labeled Wonder Boy for the stories I turned in on them. I had been quite proud, being just a punk then. Now the title tasted plenty sour.

The point was, Rosa May Finch had been doing a little snooping herself. She knew who I was.

"Okay," I said. "So you know me. Don't you invite your friends in?"

She started to push me ahead of her, out the door. I side-stepped, pushed my foot into the door and waited.

"Don't be so cold and unfriendly, Rosa May," I said. "After all, you made a pretty good impression on me the other day. I had to come back and look some more."

Her cheeks were flushed.

"Listen, smart guy," she snapped. "You're out of your class. Better run for home before something happens to you."

"Someone like Richard Finch?" I asked.

That shook her. She stopped pushing me. Her arms dropped at her sides. Her face turned pale.

"How—did—you. . . ?"

I grinned, pushing the door open wider.

"Wonder boy," I said. "Mastermind, Mrs. Rosa May Finch. Now—do we talk?"

She didn't answer. She had lost all

interest in going out. She let me go in, and I followed her to the library. I sat down, crossed my legs and reached for a cigarette.

"Take off your coat, kid," I said. "We're going to make talk."

She removed her coat slowly, as though undecided just what to do. I had been listening carefully ever since I came in. Listening for that cat that made footsteps like a man. I didn't hear a sound.

"Wait here," she said. There was fear in her eyes. Not fear of me. I knew that by the way her eyes shifted around the room. She went to the hall. I heard the key turn in the front door. Then she came back. She sat on the divan and said:

"It's warmer—here near the fire."

I was as close to the fireplace as she was. We both knew it. I smiled.

"I'm on fire now," I said. "The very presence of you in the room does something . . ."

"Shut up."

She didn't feel in the mood for my kidding.

"Okay," I said. "I've got questions. Questions like—where is Richard?"

That rocked her a little. She was still pale, furtive.

"My husband died—eight years ago."

I nodded.

"Sure," I said. "Buried without record. No line of type about his death. No, Rosa—try another. That's not good."

She stood up and took three faltering steps toward me. She collapsed to the floor, close enough so that her hand rested on my knee. Her arms crept around my waist.

She started to sob and she wasn't acting. I'll swear that Rosa May Finch was deathly frightened.

"Oh God—Oh My God! What have

I done to deserve this? I played straight with him!"

FOR a full minute she let herself go.

I watched her shoulders rise and fall in agony. Her cheek, resting against my knee, was wet with tears. I don't sympathize much with bums, but I was feeling damned sorry for her. She wasn't pulling this on me. It was the real thing.

I lifted her head in my hands. I was so startled that I clamped the palm of my hand against her forehead. It was burning with fever.

"Good Lord," I stammered. "You—~~you~~ . . . ?"

She nodded, tears streaming down her face.

"He isn't dead. I wish he was."

She leaned back, still on her knees, her head lowered, staring at my feet.

"He's a beast. A damned, dirty beast. He's doing something that no human being has a right to do. He's trying . . ."

She stopped abruptly.

"Talk," I said sharply. "He's the one who sent those people to Mount Mead, isn't he? He's giving injections."

She nodded drunkenly.

"We fought this morning. I was tired of it—frightened. I wanted to run away. He tied me to the table and put some of that awful stuff into me."

She broke down, not crying—not speaking. Her body rocked back and forth in misery. She had a bad case of chills. I helped her to the divan and she stared up at me.

"Giant or midget," she whispered. "I'm to be one or the other, Wonder-boy. I'm . . ."

She fainted.

I went to the phone, a cream colored dial affair on the desk. I picked up the phone and started to dial.

"Put it down, wonder-boy."

The voice was a man's, intensely cruel, even. I put the phone back in the cradle—slowly. I turned around even more slowly. The man in the door held a shining black automatic. It was a heavy caliber, pointed at my chest.

The man was Richard Finch. I knew him at once, though I had seen only that one pic of him, taken several years back. I started at his feet and worked upward with my eyes. Shining patent leather shoes, dark, carefully pressed trousers, and blue-black coat. His face was thin, with deep-set greenish eyes, a hawk-like nose and a straight white lipped gash of mouth.

"Sit down, wonder-boy," he said. He practically purred the order. I was beginning to loathe that *wonder-boy* stuff. I sat down because I didn't want to tackle that gun.

He crossed the floor swiftly, walking without a sound. He sat on the edge of the divan, touching his wife's forehead with light fingers, never taking his eyes from me.

"Coming nicely, isn't she?" he asked. "Or wouldn't you know anything about the serum?"

I shook my head.

He smiled. It wasn't much. The straight lips didn't curve. They parted, showing white, wide teeth.

"I'll have to show you," he said. "Perhaps we can even arrange for a demonstration."

I DIDN'T have anything to offer to the conversation.

"I think we can safely leave Rosa May here," Finch said. His fingers traced a line across her forehead. "Suppose we retire to the laboratory? It should prove most interesting to you."

I walked out into the hall. He didn't prod me with the gun. He stayed a short distance behind me.

"Upstairs," he said.

I went up slowly, dragging it out. The second floor was split in half by a long hall. Three doors opened on one side. Only one door on the other. I stopped and looked at him questioningly. He motioned toward the single door.

I went in. I was startled because I expected to see a cross between the morgue and Frankenstein's mansion. I got an eyeful of clean, white laboratory. It was brightly lighted by one entire wall of glass-blocks. It was filled with tables and test tubes.

At the far end of the room was a long table, with four straps that looked as though they might hold a man down regardless of how much he fought to free himself.

Finch pushed me toward the table. I didn't argue. The longer he carried that gun, the more sure I was that he planned to use it.

"I'll have to strap you to the table," he said.

I said: "Why?"

Finch smiled.

"You're going to die within the next hour anyhow. I'd like to tell you a little about myself first. If, during that time, you decided that death was too unpleasant to face without a struggle, I *might* be hurt in the scuffle."

"Very neat explanation," I admitted. "Can't see how I could hardly refuse to do as you want me to."

He grinned again, waving the gun slightly.

"Hardly."

I was close to the table now. I could almost feel his breath on the back of my neck. I whirled around, jerking aside to get out of line with that gun. At the same time, I snapped my left shoulder upward and connected with his chin. That threw him for an instant. I heard his teeth snap together. He had his mind concentrated on that

gun. He pulled the trigger and the bullet smashed past me into the wall.

He stepped back two paces and started to lift the gun again. I knocked it out of his hand. He stood unarmed, frightened without the weapon, the fear showing in his narrowed eyes.

"You're tough," I said, "as long as you've got lead to sling. Now start slinging something else."

I let him have it with my right fist. I hit him so hard and with so much hate behind it that the blow hurt my knuckles. He went down and the wind hissed out of him. I strapped him to the table.

After a while he opened his eyes. I guess I failed to realize just how cool a cookie I had on my hands. He smiled a little crookedly. His lip was cut wide open and I guess that smile must have hurt.

"We seem to have changed places," he said. "Well, it can make little difference."

I had been doing a lot of wondering about Richard Finch. Rosa May was still downstairs, I thought, under the influence of the strange drug he had given her. When she recovered, she'd be like those people at Mount Mead. Richard Finch was responsible for all that.

Why had Finch done this? He could make no personal gain. How could I trap him into telling me why? How could I make him effect a cure? That last question was all important.

"Just how much difference *does* it make, your being in my place?"

He looked at me a little dreamily.

"The job is done," he said. "In twenty-four hours the city will writhe in pain. Its people will suffer even as I have suffered for these terrible years."

SO THAT was it. The guy was sore because once, a long time ago, the

city had taken away his privilege of practicing medicine. I was beginning to understand more about what had been happening. Until now, I had blamed it all on a deep, desperate plan to undermine the morale of the people. Now I could see that it was even worse than that. It had all happened because one crazed man was getting his revenge. That meant I was dealing with a crackpot. It meant that I had to think fast and allow for him to try almost anything.

"You can go a little deeper into that explanation," I said. "Just how can you cause more trouble than you already have? You're tied down securely for the duration."

He chuckled.

"You're thinking of the serum, and the injection needles. You're wondering how I can hurt people unless I'm free to give the injections?"

I nodded. I thought I'd better keep quiet. I could learn in only one way. I could listen.

He laughed again, and it wasn't like any laugh I'd ever heard before. In spite of the straps, he was stretched out, relaxed like a cat.

"The needle was quite primitive," he confessed. "You see, I have often wondered about people. You'll find that a little man, living with his larger friends, considers himself a misfit. He'll fight at the drop of a hat. You should know."

I felt my face getting red.

"Sure," I admitted. Sure, the little guy is afraid he's looked down upon. He might get overlooked when the hero medals are passed out. He's on guard and ready to fight for his rights."

He nodded.

"And the giants of the earth?"

I could see the point.

"He likes to push people around a little, just to show he can do it."

Doctor Richard Finch nodded. He

was enjoying himself a lot.

"I saw that a long time ago. Once I committed a crime. If I had had money and a good lawyer, I could have escaped punishment. I had neither. I was robbed of everything. I lost everything in life that I ever wanted."

He took a deep breath. In spite of his bravado, I knew he didn't like the idea of being strapped to that table. He had planned it a little differently.

He went on talking.

"I'm a patient man, but I planned a revenge. Experimenting with the glands that control the growth of humans, I hit upon the serum. I haven't been able to control it. I don't know, at the time it's placed in the blood stream, how it will react.

"Some people grow—some shrink. I don't want to know how to control it. If I did, it would become an instrument to do good. As it is, the serum serves my purpose."

I nodded.

"It produces misfits," I said. "If you can produce them by the thousands, you'll turn them against each other. They'll make this a damned unpleasant place to live. Good, Doctor Finch, very good. But you overlooked just one thing. You can't use the serum any longer. You're tightly trussed up and you're going to stay that way."

He shook his head slowly from side to side.

"I don't *have* to use it. It's already hard at work. It will remain at work. You can't get the truth from me. I won't tell you how it works, and you're powerless to harm me until you find out."

HE HAD me there. I figured it wouldn't be simple. The serum wouldn't be a thing that you could put into the city water supply, for instance. That was corn, and Richard Finch

wasn't corny. Not by a damned sight. Sweat started to ooze from my forehead. My hands were clammy. I wanted to wrap my fingers around his neck, but I couldn't—not yet.

I said:

"Okay, Finch. You know as well as I do that Doctor Kindred has been stricken by your disease. He's the only man who knows about it except me."

I didn't mention Joan Kindred. I didn't want to mix her up in this mess.

"I can't turn you over to the police because they haven't the imagination to believe a story like the one I'd have to tell. While I wait for you, you lay there and do some thinking. What you've got on your mind isn't very healthy. You might decide to help me."

He didn't even blink.

"I doubt it," he said. "I'd rather die than spoil the progress I've made. I told you that I was a patient man. More patient, I imagine, than you can afford to be under the present conditions."

He had me. I went out and turned the key in the door. I went downstairs and into the library.

I wish I hadn't.

Rosa May Finch was still there, sitting on the divan. She was pointing a little automatic pistol, aimed at my head. It wasn't the gun that made me turn white. It was Rosa May herself.

She wasn't bloated or misshapen in any way. She was, if anything, even prettier than she had been. Her dress couldn't grow as she had grown, and shreds of it clung about her body.

Rosa May Finch had changed all right. I'll swear that if she had stood up, she'd have touched the ceiling. The serum had worked. She looked like an Amazon, but maybe the biggest Amazon that had ever lived.

"Up with your hands," she said.

I had no idea of doing anything else.

"What did you do with my hus-

band?"

I nodded over my shoulder.

"Upstairs," I said, and wished at once that I hadn't said it.

A smile came over her huge face.

"Come over here, Wonder-boy," she said. I went. She placed the pistol carefully at her side.

"You know," she said with a half smile, "I don't dislike this idea at all. I've seen Richard do some terrible things with that serum, but this time he made a mistake."

I agreed with her, silently.

She leaned over. She had to, to reach my mouth. She kissed me—hard. She put her hand behind my head and crushed my face against hers. She mashed me up against her until I wondered if I'd ever walk again. Then she pushed me away. It wasn't any fun, being pushed around by a giantress who didn't know her own strength.

"I've always liked you a lot," she said. "It's no thrill to kiss you now. When I wanted to play, you *didn't*."

Boy, I'd play now. I'd let her use me for any little game she wanted to invent, if by doing so, I could just get out of her reach.

"We're going up to see Richard now," she said. She stood up and pushed me along with the muzzle of her gun. Every time she pushed it into my back, I tried not to fall down.

When she saw Richard tied to the table, she laughed loudly. It wasn't a pleasant laugh. I won't try to describe the expression on Finch's face when he saw her. He just shrank into himself. His face was ghastly. He muttered just one word.

"Rosa?"

She walked over and poked a finger into his ribs. It hurt him.

"What's the matter, Rich?" she asked. "You used to like to be tickled."

He said nothing.

SHE brought the palm of her hand down against his face. It came away red with blood. Finch gasped and tried to get free. His cheek was open and bleeding. Her nails had cut a gash from his cheek-bone down to the corner of his mouth.

She seemed to forget me. She was interested only in hurting the man on the table. I had been doing some fast thinking. I couldn't let her kill him. I'd never find the secret of the serum, and how he planned to use it.

"Take it easy," I cautioned Rosa May. "Keep him alive. You don't know your own strength."

She pivoted, facing me.

"Shut up," she snapped. "He's been pushing me around for a long time. I've had to hide up here like a prisoner. I never got any decent breaks. He made me submit to a shot of that serum because he hoped to make a midget out of me. Then he could have made me suffer even more."

She took a deep breath. Her bosom was rising and falling swiftly. In a way, Rosa May Finch was pretty nice. Her huge body was perfectly proportioned. Barefooted, she stood there like a Goddess. The whole world lay at her feet, waiting for her to tread on it.

I said:

"Okay, kill him then. Once he's dead, you can't make him suffer any more. Why not give him a dose of his own medicine? If he turns giant, you can shoot him before it's too late. If he reacts in the other direction, it would be nice to have a midget around to kick now and then. Think it over."

There was a light in her eyes that was terrible. She smiled. It was a smile that I hope never to see again. This was the biggest bluff I had ever tried to pull. One or the other of them was going to see through it sooner or later. I hoped it wouldn't be before I had

accomplished my purpose.

"You get good ideas," Rosa May said.

I heard Finch gasp in horror.

"No, Rosa, you can't do it. Not to me."

She forgot all about me then. She slapped him again.

"Oh, I can't—can't I?"

She strode across the room, knocking stuff off the tables as she moved. There was a locked cabinet against the far wall. Rosa May knew her way around.

She ripped the padlock off. Half of the door came with it. She found a hypodermic needle. There were dozens of them, filled with a green liquid. She put her first and second fingers on either side of the tube, her thumb on the plunger.

Finch started to writhe around on the table, fighting away from her. He called to me a couple of times, but I pretended not to hear him. It was hard to watch it happen. Hard, even when I knew he had done the job himself a hundred times.

I kept thinking of that surgeon's knife sticking into Carl Finch's body, and it made everything easier.

Rosa May ripped half of his shirt off, found the thick vein in his upper-arm and sent the needle home. She drained the tube and tossed it on the floor.

"Now we'll wait," she said savagely. "You'd better start shrinking, Rich. I'll blow your head off if you grow any larger."

The room got very quiet. Ten minutes passed. Rosa May didn't look at me. I was glad. I sat in a chair near the door. Fifteen minutes. The stuff reacted fast. Probably because of Finch's fear. His eyes became bright with fever. His face was flushed and red. Perspiration poured down his face. What was left of his shirt, became soaked with sweat.

Rosa May continued to stare at him. After an hour, Richard Finch started to shrink.

That's the only word for it. I saw his face become smaller. I heard Rosa May sigh. Now she would have her fun. She wasn't to be robbed of her pleasure.

As Finch grew smaller, she tightened the straps that held him. Two hot, insufferable hours passed and the change was completed.

FINCH'S eyes were like animal's eyes. They were clear and understanding. He wasn't over three feet tall. His clothing hung loosely around him, his feet had slipped from his shoes.

I stood up and edged closer. I still had my gun hidden in my arm holster. I just wasn't ready to use it.

"So, we've got him where we want him, have we, Rosa?"

She looked at me and scowled, as though she just remembered that I was there.

"Shut up."

I said:

"I'm not shutting up any more. I didn't know where the serum was, Rosa. Now I do. I couldn't give a shot to your husband until I knew where it was. You've done that for me. Now your part of the job is done. Rest easy and keep your mouth shut. When I get done with Finch, we'll know how to cure you—and the others. Richard is going to talk, *aren't you Richard?*"

He swore at me. He reminded me of a monkey. An ugly, very bad tempered monkey.

Rosa May came after me slowly.

"You cheap little trickster," she said. "I *like* being this way. When I was normal, I got kicked around. Now *nobody* can hurt me. Not even you, understand?"

She made a grab for me and I slipped the gun out from under my coat.

"Look out, Rosa. I still carry a sting."

She didn't stop, and I had to shoot her on the hand. I didn't have the heart to make it worse. She let out a howl of surprise and pain and tried to knock me down. I shot again, through her shoulder. She went down on her knees, sobbing with pain.

"I'm sorry," I said. "I hated to hurt you. You're not a bad kid, but your size has gone to your head."

"You stinking little . . ."

She lunged toward me and I got out of the way. There were tears in her eyes. Blood gushed from her shoulder. She needed care right away.

"Listen," I said, standing a safe distance away, "I'm a funny guy. I didn't want to hurt you. I kept that gun out of sight because I wanted to learn some things that I'd never have learned if I'd used the gun too soon. If you try to get me, I'll drill you through the heart. I'll do that because you're not very damned important, compared with what's at stake. Now play ball, and cut out that rough stuff."

She took one long, pitiful look at me and started to cry again. She buried her head in her hands.

"You're a crumb," she said. "A miserable little crumb. I tried to be nice to you and you wouldn't let me. You'd kill me, just like Rich would. I can't trust either of you."

I PUSHED the gun into my coat pocket where it would be handy. I found Finch's shirt (the part she'd torn off him) and wrapped it around her shoulder. There was a first-aid kit on one of the benches. She sat quietly, staring at me with puzzled eyes, while I bandaged her shoulder. It wasn't a bad wound. It hurt her pretty badly

but she didn't cry again.

Then I left her alone and went over to Finch.

"How would you like to die?" I asked as calmly as I could. I wasn't clowning. I had an act to go through and I knew I had to do it.

He wasn't as cocky now.

"You can't hurt me," he said, but he knew I could. "I've done what I started out to do. I expect to die. The sooner you pump lead into me, the better. You'll never find the cure you're looking for."

I grinned.

"Then there is one?"

He hadn't meant to give it away. His mouth snapped closed.

"I'm not going to kill you," I said slowly. I acted as though I was thinking of something pretty nasty to do to him. "I've got a better plan."

"I'm not interested," he snarled.

"You will be. I'm going to take you down to police headquarters. I'm going to buy a little boy's suit with short pants and parade you up and down every street in town. I'll tell the cops some damned fool story about you being a vagrant and breaking into my house. The charge won't stick, but by the time they start to realize that you're a midget, your picture will be on every damned front page in the country. You're quite a freak, Finch."

He was jumping around on the table all right now. He was taking a new interest in life.

"You wouldn't . . ."

I laughed.

"I might even dig up that picture taken of you when you were thrown out of the medical profession. Sort of a *then* and *now* comparison. The paper would eat up that stuff."

His voice came, very low and hoarse. I heard Rosa laugh. Just a little laugh—half triumphant—half frightened.

"I—couldn't stand that stuff. I've suffered enough."

"Some people think you should suffer more," I said bitterly. "I'm one of them."

"Please," Finch begged. "You're—taking advantage."

Funny about that guy. He was a crook and a murderer—worse, yet he still had his own sort of pride. It was breaking him, just as I hoped it would.

"And *you* weren't taking advantage of those poor damned souls at Mount Mead? You won't take advantage of thousands more? Tell me, Finch, where is the antitoxin that will cure this thing? Tell me, and I'll give you a fighting chance."

There was a gleam of hope in his eyes.

"What—chance?"

"I'll return you to normal size," I said. "I'll give you an hour start and I'll come after you."

He shuddered.

"You're—a—killer."

I shrugged.

"Just a wonder-boy," I said. "Just a little guy, like the ones you talk about, who's gonna drill you before this is over with."

Finch shuddered.

The afternoon sun was hot on the glass-block wall. Rosa was silent, waiting. I had no idea where I could get that antitoxin. I was still powerless.

"All right," Finch said in a tired voice. "I can't face the public—like this."

"I know," I said. "Where's the antitoxin?"

"Let me up, and I'll get it."

"That's not even smart." I grinned. "I'll get it. Rosa will stay here and watch you."

He swore.

"There's a tank in the basement. Fifteen gallons. I mixed up a lot when

I was experimenting with animals."

I turned to Rosa May.

"Watch him while I'm gone," I said.

Her lips parted. Her eyes were wide, almost—yes, I guess, almost *devoted*.

"*You trust me—after what happened?*"

"Why not?" I asked.

I FOUND my way into the foul cellar. There was a smell of death down there. Shrunken cat bodies—dead rats. A skeleton of a dog. The tank was of clean, light metal. Full of heavy liquid. I went upstairs with it. Rosa May hadn't moved. She watched me when I went to the table and opened the tank.

"There are clean hypos in the cabinet," Finch said. "For God's sake, make sure you get a clean one."

He was still stalling. I knew it, but I couldn't figure out why. I knew how to cure the cases that existed. I still didn't know how Finch had distributed the serum so that it would affect the entire city.

I found a hypo, filled it with the amber fluid and shot the stuff into Finch's arm.

"You're the first victim," I said. "If it works on you, it will be safe for the others."

"Quick," his voice came in sudden gasps. "Loosen the straps. It will react swiftly. My arms and legs may be broken if . . ."

I loosened the arms. As swiftly as a cat, his right arm was free. He twisted half around, and yanked the gun from my pocket. I pivoted and hit him beside the head. Then, while I expected him to shoot any second, I backed away.

"Sap," I said. I didn't mean Finch.

He laughed.

"Don't worry—too much," he said. "I'm not going to shoot you. I've a

better plan."

I waited.

"If I shot you, I'd be found sooner or later, and suffer for it. If I don't shoot you, and remain alive myself, you'll hound me until I have to give up."

His lips curled until his teeth were bared in a snarl.

"You have the antitoxin. You can cure Rosa and the others, but you'll never duplicate that antitoxin. If you do, it will take years of research. Meanwhile, thousands of people will be stricken. They'll fight and die and behave like the animals they'll be. The thing will spread until there is no one left to control or cure it. You see, wonder-boy, I already have my revenge, and you're *not* going to parade me in the streets as a freak."

He was breathing hard. His body was responding to the antitoxin, growing, swelling.

"You were almost clever enough," he said. "You can't make me suffer any more. I'm just a bit too smart for you."

He turned the gun on himself and pulled the trigger. I sprang forward, ripping the weapon from his already limp hand. Rosa May started to cry again.

"That won't do any good."

I turned on her, shouting. She stopped crying and just looked at me. I stood near the table, looking down at the limp body of Richard Finch. This was the corpse of the only man who could have helped me save the horror that was to come. I felt sick to my stomach for being such a dope.

I found the needle and went to Rosa.

"You're no good to me this way," I said. "I'll make a normal woman out of you, unless you want to commit suicide like he did. I'm so tired I don't care much if you do."

I meant it. I was all washed up. I gave her the shot and sat down with my back to her, staring at the corpse on the table. It was trying to open a safe without knowing the combination. The corpse had a lot of knowledge locked in its dead brain. Carelessly, I had brought the whole thing on myself.

ROSA MAY FINCH was badly shaken. She sat at my side in the coupe. She had a new dress on, and the bandage on her shoulder was well hidden. The can of antitoxin was on the seat between us. I drove directly to Mount Mead. I met Jean Kindred on the sixth floor. Her eyes questioned Rosa May's presence. I introduced them.

"Joan—meet Rosa May Bronson."

I had a reason for using that name. The name she had given me first.

"Rosa May was Carl Finch's maid," I told Joan.

"The man who was murdered?"

I didn't tell her that he was murdered by his brother, because he knew too much.

I just nodded.

"I came to see your father."

I felt strange with Joan's eyes on me like that. She wasn't satisfied with the way I was acting. Neither was I.

She wanted to see me alone. Neither of us had forgotten that kiss. I guess I'd never forget.

"Dad's resting well," Joan said. "He's in a private room."

"Good," I had the can of antitoxin under my arm. Rosa May had her arm through mine. She held on tightly. "Let's see him right away."

I had to act coolly toward Joan.

It had to be that way. This was the last part of the last act. After this—curtains. Curtains so far as I was concerned, for the only girl I had ever loved.

Joan led us down the hall. She paused at the door, opened it and let Rosa May and me go in. She took my hand before I got away from her and said:

"I—I worried when you were gone."

I pushed past her.

"I get by okay," I said.

She didn't answer. She kept staring at me as I approached her father's bed. I could *feel* the dismay, the wonder, locked inside her. I was hurting the girl as deeply as she could be hurt—and doing it deliberately.

Rosa May stood near the door, her eyes travelling occasionally toward Joan, then back to me again. Doctor Joad came in and I put the can in his hands.

"There's the antitoxin I called you about," I said. "An injection of that will cure your patient—and the others. In a few days other cases will be coming in. You'll run out of antitoxin. You'll be unable to cope with them."

I stopped talking, looked down at Kindred and smiled.

"Your troubles are over, Doctor," I told him. "But listen closely. I told you who was responsible for this. Before he died, he injected the stuff into rats and cats by the score. It will take some time for it to react. The animals who were given the serum will not change in size. They were given small doses until they could take the full amount without a size change."

"These same animals will spread the disease with their teeth and claws. Every person scratched will get the disease. In a few weeks, every animal in the city will be a carrier."

I paused, heard Joan sigh. Doctor Joad was busy with the needle. He was giving Kindred an injection.

Joad said in a matter-of-fact voice:

"The disease will not spread. Every animal will be gassed, if I have to do the job myself. You've done more than

your share. We'll take care of it from here on."

"Thanks," I said. "I'm—a little tired. I'd rather not answer any questions. I don't think it would do any good. The man who is responsible, is dead. Once the disease is wiped out, it will never happen again."

Joan started to walk toward me. There was a bewildered smile on her face.

"I think we owe you more than you'll ever know."

THAT wasn't what she was thinking. She was pleading with me to be alone with her. She was cutting me right across the heart—deep.

I looked at Rosa May. She was smiling. It wasn't a sarcastic smile. She was sincere enough. She wanted me to leave, and I had to leave because she wanted it.

"I hope you'll excuse us," I said. There was a hell of a lump in my throat.

Joan turned and left the room. She looked very straight and determined. Doctor Kindred looked up at me. There was confidence in his voice.

"You'll be around to see us—soon?"

"I'll be around," I said.

We went out with them staring at our backs. I felt sick all the way down to my shoes. On the elevator, the little nurse who had first taken me up to the fifth floor, handed me a note. I took it and winked at her.

"Thanks, baby," I said, "you don't have to write me notes. I can see the love in your eyes."

She froze up like a fish, but her eyes were twinkling.

In the coupe, Rosa May and I drove away from Mount Mead. After a while, Rosa May looked at me.

"You're in love with Joan Kindred, aren't you?"

I didn't say anything.

"She loves you. You know you hurt her pretty bad?"

"I made a deal with you," I said. "I won't walk out on you."

It's a hell of a deal, I kept thinking. A hell of a deal, but it's saved a lot of lives.

"It was lucky I knew about Richard's work," she said after a while. "He told me what he planned to do, but he didn't think that I'd ever dare tell you."

I couldn't resist making a crack at that.

"You set the price pretty damned high."

She laughed. It was a pleasant laugh and she wasn't trying to hurt me.

"I made you promise that you'd take care of me, and me alone. Made you promise that I'd get the breaks, and own a share in you—for keeps. Is my love too shabby for you? Was the deal a bad one?"

I shook my head.

"I'm not the sentimental type," I said. "You told me something I had to know. I promised in return to fix things so you wouldn't worry any more. That I'd stick around and play the game the way you wanted it. Is that fair enough?"

"No," she said. "Pull over to the curb."

I pulled over and stopped. It was part of the price. It was also the first time I'd taken orders from a woman.

She put her arms around my neck and made me kiss her. Her lips were hot and starved. She did a good job of making me forget almost everything else.

I must have put the note in my pocket carelessly. When we came out of the clench, the note had fallen to the floor. It was partly open and I could see Joan Kindred's handwriting. I

pushed it over with my foot so it was hidden from Rosa.

I tried to drive slowly and read at the same time.

"*I know something is wrong,*" Joan said. "*I feel it inside. I'm not going to follow you or try to bring you back. You're not fooling me. I know, after that kiss, that you love me. You'll come back—sometime. I'll wait.*"

That's all I read. I brushed my hand across my eyes.

"What's the matter?" Rosa May asked. "You got something in your eye?"

"Yes," I said. "A cinder."

"You aren't going to break your promise? I told you enough to save all of them. You're going to keep your word?"

"I'm keeping my word," I said savagely. "Stop crabbing. We been together just two hours now and you talk like we been married ten years."

"I'm sorry." She leaned against me. "I'm scared. You're the first guy ever treated me decently. You're the first guy I ever really loved. I been kicked around so much, I'm afraid of getting kicked some more. You know how I feel, don't you?"

She was warm and snug against me. She put her head on my shoulder and kissed my neck.

"I know," I said. "I'm not sore. Just a damned cinder in my eye. It—hurts—pretty bad."

I didn't tell her that *she* was the cinder. I wanted to feel noble because I had saved the population of a whole city.

All I could think of was Joan—and what she'd said about me coming back. How could I? I'd never broke my word before. Could I this time? I knew suddenly there was always a first time for everything . . .

THE END

ROCKET LABORATORY



By William Karney



IT HAS been announced that one of the objectives of shooting V-2's and Neptunes and Wac Corporals and other rockets into the air has been not only military research but also research on the Sun! How is this possible? What connection can a hundred mile rocket have with the Sun?

It has plenty. Remember that every beam and mote of sunlight which reaches the telescopes and spectroscopes of earthly scientists has to filter through a blanket of air. This blanket of air becomes an excellent vacuum from about seventy-five miles up. Therefore, it is incapable of extracting much light from the light which penetrates it. It is only farther down that much light is lost. And since light is the principal carrier of celestial information, the object is to gather as much of it untouched as is possible.

Spectroscopes mounted in rockets are able to do this. Spectrographic analysis captures information via the photographic plate and preserves it for study below. In particular it is desirous

to know more about sunspots since they play such havoc with communications here on earth, not to mention radar.

While we have learned a good deal about these restless and gigantic whirling, swirling pools of gas, we need more information.

The sunspots which characterize the photosphere or outer layer of the Sun are tornadoes or ruptures in the milling, seething clouds of copper and iron and magnesium. While a cyclic behavior of sorts can be ascribed to them, their basic cause is unknown. Sunspots appear black. Actually this simply is due to contrast. They are brilliant, but their surrounding photosphere is so much brighter that they appear black by comparison. Sunspots range in size from five hundred to fifty thousand miles in diameter.

When instrument laden rockets bring back more information on the behavior of these weird things, possibly a successful theory will be devised which will succeed in clarifying their nature.

* * *

NOISE — LOUD AND DEEP!



By Ralph Bailey



PERIODICALLY branches of science pop out with announcements somewhat startling in nature. Particularly is this true of new sciences like ultrasonics. For only a short while ago this subject was shrouded in the esoteric theory that surrounds little known branches of science. Now the news is amazingly practical and the applications are occurring by the hundreds.

Ultrasonics is the study of high frequency sound, sound which ranges above the audible, sound which is greater in frequency than sixteen thousand cycles per second. In some cases the frequencies of sound generated may go up to hundreds of thousands of cycles per second and even higher.

The high frequency sound is generated by feeding currents of such frequencies to mechanical bodies capable of resonating at such vibrational speeds. Sometimes quartz crystals are the oscillators, sometimes, metal bars in the form of magnetostriction oscillators.

Regardless of their construction these supersonic generators provide high frequency sounds.

Now for some of the startling results. For one thing it has been learned that plants subjected to such frequencies deliver mutations strange to the plant world and similar to those produced by x-radiation. Sunflower seeds develop in a remarkably short time. This may have some value be-

cause such seeds can be used as cattle feed.

The effects of high frequency sound upon the pasteurization of milk, the speeding of the germination of seeds, the drying of various crops, the destruction of mosquito larvae—all are significant forerunners of the practical uses of the science. Scientists have found that the heating effects of supersonics are strong. Thus water can be boiled, insects destroyed, materials cooked, by a concentrated beam of supersonic energy.

Ultrasonics remove dust from the air and have practical application in the cleaning of clothes. The possibilities seem provocative. It remains to be seen whether they will be borne out.

Quartz oscillators generating supersonics can be used as thickness gauges for metals and materials. The material becomes resonant to a certain frequency depending on its thickness. By this method it is then possible to measure the thickness of pipes or spheres without penetrating them.

Also such gauges will detect flaws in metals. When a flaw is encountered by the sound beam, it reflects it, and locates the flaw by means of "pips" on an oscilloscope screen.

With detectors of this sort all shafts and equipment subjected to great strains can be examined without destroying the tested subject. This is of great advantage in turbines, motors and the like. It is even better for some applications than x-rays.

LAMP OF NO LIGHT

By ALEXANDER BLADE

Heath knew that the lamp was nothing but a curio, and besides, he didn't believe in fairy tales—but then he rubbed the bronze surface . . .

"ARE you Robert Heath?" the messenger asked.

Heath removed the smouldering pipe from his mouth and opened the door wider. "Yes. What is it?"

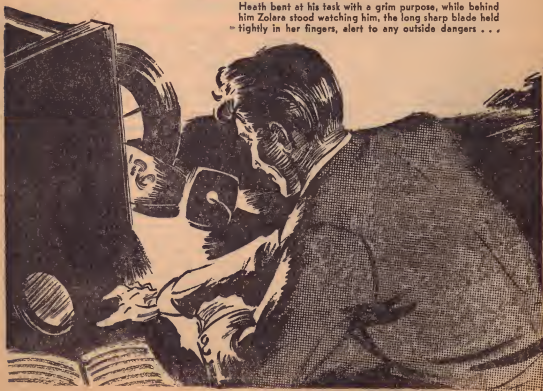
"Package for you. Sign here, please."

Heath scrawled his signature on a slip of paper, then took the small manila-wrapped package which was held out to him and closed the door. Ex-

amining it speculatively, he walked back to his desk, near an open window. He pushed his typewriter to one side and sat down and began to strip the parcel of its wrappings.

The tough manila paper came away. Heath was looking at a beautifully carved teakwood box and two letters. Brows drawn puzzledly, he opened the first of the two letters, the envelope of

Heath bent at his task with a grim purpose, while behind him Zolera stood watching him, the long sharp blade held tightly in her fingers, alert to any outside dangers . . .





which bore the printed name of John Kelsey, who for many years had been the Heath family lawyer. The letter read:

"Dear Robert:

It is my sad duty to inform you that your uncle, Jasper Heath, recently passed away. His death was due to a recurring fever which he contracted during his years in the East.

I am extremely sorry that you were unable to attend the funeral because of my tardiness in locating you. I had a great deal of difficulty in locating a publisher who had your latest address, since it seems that you writers seldom remain in one place long.

However, your uncle Jasper left you this box in his will. As you will find, it contains merely a bronze lamp of great age, which he must have picked up on his travels in the East. I'm afraid that I cannot understand why he should leave you such a niggardly bequest, since it is obvious that the object is worth only a few hundred dollars—and then that only to certain collectors. You were his favorite among the children in the Heath family. But perhaps his accompanying letter will explain matters.

Hoping that this finds you well, I am,

Your faithful friend,

John Kelsey."

Heath shrugged slightly and put the letter aside. Picking up the teakwood box, he studied the carvings upon it briefly, then pushed at a metal latch and lifted back the hinged top. Within the silk-lined interior was an object about the size and shape of a cream pitcher.

Eyes narrowed, Heath lifted it out and turned it around in his hand as he inspected it. The object was an ancient bronze lamp as Kelsey had said.

Light from the nearby window fell over it, softening the patina of age which lay over its surface. The illumination threw into faint relief a line of inscribed characters which ran around the rim. They were almost illegible and resembled Arabic script.

PRESENTLY Heath replaced the lamp within the teakwood box and opened the second of the two letters. This one bore the bold, precise handwriting of his uncle, Jasper Heath.

"Dear Bob:

The time when I shall be forced to depart from this world is coming soon, and I thought it best to write you this while I am still able.

I have already filed my will with Kelsey, and he has my instructions to deliver to you the teakwood box upon my death. I have made no other provision for you, but please do not feel that I am being unfair. The contents of the box are more valuable than any amount of money I could have left you. No doubt you will already have opened the box and will think me just as crazy as my dear relatives say I am—but be patient a while and hear me out.

I found the lamp while curio hunting in Bagdad during one of my first business trips to the East. Its true nature did not become clear to me until much later, and that quite by accident. While cleaning the numerous souvenirs I had purchased, I happened to polish the lamp with a cloth—and something took place that almost gave me heart failure. I knew then what the lamp was. But I shall say only this: The story of Aladdin is not a fantasy!

I'm not going to commit myself any further. I'll leave you to find out the curious properties of the lamp on your own.

To go on, possession of the lamp explains why I was able to retire from business so prematurely and spend the rest of my life in traveling. In fact, possession of the lamp *forced* me to travel. For there is danger connected with the lamp, Bob. There are men who know of its existence, who will do just about anything to obtain it. While you have the lamp, every second of your life is threatened. The lamp, however, will give you the power to protect yourself, if you use it wisely.

I have no doubt but that you will—that is why I am leaving it to you. Out of all the members of the Heath family, you're the only one most like me in spirit. Guard the lamp well and use it with caution. Be wary of strangers who seem to take an undue interest in you.

Your affectionate uncle,
Jasper Heath."

Heath read the letter again, his expression a mixture of wonder and disbelief. Then slowly he slid the letter back into its envelope and put it away with the one he had received from Kelsey. He looked for a long moment at the teakwood box. He reached into it and lifted out the lamp, his movements deliberate and careful.

Holding the lamp in one hand, Heath slowly raised the other toward it. The room seemed to become very still. Once Heath's hand quivered as though he were going to brush it across the lamp. But his arm froze, and he moistened his lips.

Beyond the window the afternoon sky was blue and cloudless. The sun was bright and warm, and a little breeze drifted in to flirt coyly with the papers on the desk. The sounds of a city street were in the air.

Heath shivered.

He put the lamp down. He rose and

slammed the window shut. He lighted his pipe and began to pace the floor, his movements irregular and jerky. His glance kept returning to the lamp with a kind of dreading fascination.

SUDDENLY he halted at the desk and looked down at the ancient bronze lamp as though having reached a decision. The pipe was gripped tightly between his teeth, and his fingernails were scratching slowly at the palms of his hands.

Then, with a snort of self-derision, he picked up the lamp again. He held it in front of him for a moment, as though making certain his grip was firm, and then he brought up his other hand and rubbed the palm swiftly and firmly across the lamp's surface.

Tensely he waited. A deep stillness came into the room.

Abruptly a sound became audible. It seemed to come from a vast distance, something sensed rather than heard. It had the quality of a plucked harp string, and like a harp string it vibrated—vibrated and grew until it filled the room, and still it could not be heard but only felt.

Heath glanced sharply about him, his eyes wide. Then he blinked, puzzled. His vision seemed to be affected with an odd distortion, as though he viewed the outlines of the room through a thick and uneven barrier of glass. The distortion increased. Objects twisted and turned into a crazy pattern of angles and planes.

Dazedly Heath shook his head. And then he noticed that the weird distortion seemed to be concentrated at a point near the middle of the room. All the incredible lines and angles seemed to focus here. The spot had an appearance of a vortex—an opening. An opening that led the eyes into a mind-wrenching infinity of distance.

In the opening something took shape. A face. A huge dark face that had a solemn dignity to it. Below it was the suggestion of great shoulders and great arms folded across a massive chest.

"I," rumbled the face, "am the slave of the lamp. Command me, and I obey!" Impassively it regarded Heath, waiting. From the impossible distance echoes of vibration sounded.

Heath's pipe had fallen from his mouth. He was clutching at the edge of the desk, staring. He tried to speak, but no sound came from his lips.

The face waited quietly in the opening. The crazily twisted lines and angles seemed to shift lazily about it. The dying echoes of vibration made a ghostly whisper of sound.

At last Heath got his voice into action. "Go . . . go away for the present." His tone grew stronger. "I . . . I'll call you later."

"I hear, and I obey!"

The face blurred and was gone. The opening seemed to expand outward, the lines and angles dissolving from around it. The strange distortion vanished, and with its going the outlines of the room regained their normal appearance.

Heath collapsed into the chair beside the desk. He drew a long breath and passed a trembling hand across his face.

Presently he got himself in control and rose again. He found his pipe where it had dropped, and he filled and lighted it. He began pacing the floor, lost in thought, a grin growing at the corners of his mouth.

It was evening when Heath again picked up the lamp. He hesitated only a moment before he rubbed it.

Once again there was the far-off sound of vibration and the weirdly distorted visual effect. The face appeared.

"Command me, and I obey!"

"Food," Heath said calmly. "Bring me food."

"I hear, and I obey!"

The face blurred and was no longer visible, and Heath waited eagerly. Then, with startling abruptness, the face reappeared. Great hands stretched from behind the opening and placed a silver tray, covered with dishes, upon the floor. The hands withdrew. There was a movement, as of great arms being crossed. The face regarded Heath quietly, apparently waiting for further orders.

"You may go," Heath said.

"I hear, and I obey!"

It was gone. The vibrating sound and the distortion went with it.

Heath sampled the contents of the dishes gingerly, found the food rather spicy and exotic in flavor, though quite palatable, and fell to with every sign of complete enjoyment. Finally he sat back with a repleted sigh. He reached for the lamp again.

"Take the things away," he told the face.

"I hear, and I obey!"

STRETCHING out comfortably in an armchair, Heath gazed at the ceiling with the dreamy expression of a man making plans. Occasionally he chuckled.

"Good old Uncle Jasper!" he said, once.

And then there was a gentle rapping at the door. Heath sat up sharply, a wary alertness coming into his face. The rapping came again. He rose swiftly and went to where he had placed the lamp, putting it away out of sight in one of the drawers of the desk. Then he went to the door and opened it slightly.

His caller proved to be a wiry, dark-skinned man, immaculately dressed. Instead of a hat, he wore a turban of

some glistening fabric. He had a gaunt face and heavy-lidded black eyes on either side of a large hooked nose. He said:

"You are Mr. Robert Heath, no?" His voice was oddly accented.

Heath nodded slowly. "I am. What can I do for you?"

"Allow me to introduce myself. I am Hassan Ibn Razul by name, and I have traveled far to speak with you. May I not enter your domicile, that I may state my business with greater privacy?"

Heath studied the other a moment, then nodded reluctantly and swung the door open. But Hassan Ibn Razul was not the only one who entered. A thick-set, swarthy man shouldered in after him. The other was also turbaned, and had a lumpy, brutal face.

"Who is this?" Heath demanded of Razul.

The man smiled placatingly. "Goreb is merely a servant. I hope his presence does not offend you."

"Uh . . . no. Not quite that." Heath gestured toward chairs and went over to the desk. He sat down carefully, his eyes watchful.

There was a moment of strained silence. Heath picked up his pipe and glanced inquiringly at Razul.

"What did you want to see me about?"

The other leaned forward in his chair, spreading lean dark hands in a quick gesture. "I shall be frank. You have just come into possession of an ancient bronze lamp. This lamp was bequeathed to you by your late uncle. Before it fell into his hands, it belonged to my family for many years. It was . . . ah . . . a heirloom, as you call it, and it was believed by us that the lamp brought good fortune.

"Unluckily, however, it was finally stolen and sold by a treacherous serv-

ant. By chance your late uncle purchased it from a shop in Bagdad and kept it as a curio. I learned these facts as the result of a long and difficult search. Allah—blessed be his guidance!—has shown me to your door."

Razul gestured again and looked mournful. "Evil days have fallen upon my family, and with the superstition of the East, we believe that only recovery of the lamp can bring happiness back to us. Knowing that you have it, I am prepared to offer you a large sum of money if you will return it to me. It is of interest to you only as a curio. Museums and collectors would not offer you half so much for it as I am prepared to pay."

Heath shifted in his chair. The movement brought his hand near the drawer in which he had placed the lamp. He looked at Razul and shook his head.

"I'm sorry, but I don't intend to sell the lamp. I'd like to keep it, even if it isn't worth anything."

The mournfulness went from Razul's narrow face. His black eyes narrowed to glittering slits. "You could have no reason for refusing to sell me the lamp—unless you knew what it really was!" he said sharply. "Your uncle must have told you, or you must have learned for yourself. I tell you I will not be balked!"

"That means your story is a lie," Heath said. "You want the lamp for the same reason that I do."

Razul inclined his turbaned head gravely. "True—but I actually intended to pay you for the lamp. But now that you know what it is and refuse to sell it to me—"

Abruptly he switched from English to another tongue. He voiced a swift command. The man he had called Goreb awoke into motion, crossing the

room quickly toward Heath.

Heath moved with desperate speed. He pulled the desk drawer open and reached in for the lamp. He was bringing it out and his other hand was poisoning for a rubbing motion, when the lamp caught against the upper edge of the drawer opening and slipped from his grasp. Before he could find it again Goreb reached him. Something dark and heavy in the man's hand swung down. Heath felt a jarring impact against his head, felt a momentary thrust of pain, and then he was hurtling down and down into a fire-ringed pit of blackness.

AWARENESS slowly returned to Heath. He blinked his eyes open and groaned slightly and raised a hand to the throbbing lump over his ear. The hand froze in midair.

He was staring at a girl. She was bending over him, her exotic face filled with a strange anxiety.

"The lamp!" she said, in a soft, urgent voice. "Tell me—do you still have the lamp?"

For the second time that eventful day, Heath could not find his voice. His eyes were fixed upon the girl with an awed fascination. She was lovely in a way that was startling and completely incredible. Golden hair clustered thickly about her tiny face in vivid contrast to her olive skin, her liquid dark eyes and heavy black lashes. Her slender form was garbed in some filmy material that glittered with gems, and ornate jewelry encircled her slim throat and arms. Her appearance was given a further incongruous quality by the long, curve-bladed scimitar which she gripped in one small hand.

"Please speak," she murmured, her tone tense and pleading. "The lamp—do you still have it?"

Heath shook his head. "It's gone.

A thief who calls himself Razul just stole it from me. A servant he had with him knocked me out."

The girl looked stricken, her face abruptly drained. The scimitar fell from her hand and thudded to the floor.

"Gone . . . Razul has beaten me!" She covered her face with her hands and her slim shoulders shook.

Heath rose unsteadily to his feet, clutching at the desk for support. He looked down uncomfortably at the girl and rubbed his jaw with an uncertain hand.

At last she straightened. In a lithe, flowing motion she rose to face him. She was small, and standing, the traces of tears on her lashes, she seemed even more lovely than before.

Heath found that he was holding his breath. He said with an effort, "May I ask who you are? And you might also explain what this is all about. I'm hopelessly in the dark."

"I need your help," the girl said. "I shall tell you all that is necessary for you to know. I am Zolara of Iljar, a state that is located on a world parallel with yours, but on a different plane of existence. Yes," she said in answer to Heath's gasp of amazement, "I am from a different world.

"Iljar has just been conquered by the warlord Ferril al Kasim. He won not by virtue of superior cunning or arms, but because he possessed this." She extended her hand, and cupped in the pink palm was a curiously fashioned ring. "It commands a jinni as does the lamp," she explained. "By means of it, Kasim has enslaved my people, and I, the queen, he has taken for his harem.

"But he has not been certain of his power. Knowing of the lamp's existence, he wished to possess that also, for in the wrong hands it would destroy all that he had gained by virtue of the

ring. Further, he reckoned that possession of the lamp would make him doubly invincible. He located it easily enough by using the ring. It seems that a long time before the lamp was stolen by a slave named Aladdin, who escaped with it to his plane of existence. Accordingly, Kasim dispatched Razul to your world, to obtain the lamp, opening the veil between the two planes by means of the ring."

THE girl made a quick gesture. "It is possible for one to command much knowledge and power through either the lamp or the ring. This explains why, when the ring fell into my hands, I was able to find you and to speak your language. But I must hasten with my story, for by now Razul will have reached Iljar, and learning of my escape with the ring, will use the lamp to come in pursuit.

"After the fall of Iljar, I determined to obtain the ring, so as to remove Kasim and free my people. To that end I pretended that I was at last surrendering to Kasim's advances and cajoled him into showing me the ring. Once I had it in my possession, I escaped to your world. I could not destroy Kasim then, for there was still Razul and the lamp to be reckoned with. I had to obtain the lamp also. But"—her slim shoulders sagged—"Razul has reached the lamp before me. With it in Kasim's grasp, anything that I might do with the ring would be nullified."

"But couldn't you have the jinni of the ring steal the lamp from Kasim?" Heath asked.

"That is impossible," Zolara said. "The jinni have no real material existence except through these objects. They would fight to defend their vessels as a human being would fight to defend his body from being taken by

another."

"I understand now," Heath said. "The people of my world are . . . uhm . . . not very familiar with such matters."

Zolara smiled briefly, then her small face clouded again. "But we must be quick, or Kasim will find us. Yet I know not what to do." She swayed toward Heath and said softly, "You are the man—it is for you to lead."

Heath drank from the intoxicating pools of her eyes and seemed to take on added stature. In a sudden rush of activity, he snatched up pipe and pouch and lifted the scimitar from the floor.

"The ring!" he said swiftly. The girl gave it to him, and he rubbed it vigorously and thrust it into a pocket.

The distant harp note sounded. The vibration grew. The outlines of the room twisted into a fantastic pattern. A huge face appeared.

"Iljar!" Heath said determinedly. "The private chambers of Kasim! See that we are carefully hidden in some convenient place when we arrive there."

Zolara made a soft sound, and one tiny hand flew to her slender throat. But she took in Heath's grim face, and her fright was suddenly gone. Her dark eyes glowed.

"Iljar!" Heath repeated.

The jinni blinked. "I hear, and I obey!"

The distortion drew about them. It blurred their figures, seemed to twist them in an impossible direction. Then they were gone. A wraith-like echo of vibration hung on the air for a moment and was gone, too.

CAUTIOUSLY Heath drew aside the silken draperies and peered into the room beyond. Behind him Zolara waited tensely. They were hidden in a small alcove in the wall.

The room beyond was luxuriously

furnished in the same oddly Eastern manner that characterized Iljar and its inhabitants. Deep rugs covered the floors, and placed about were richly carved tables and cushioned divans. Tapestries hung from the walls. The air was redolent with incense.

There were two men in the room. One of them was Razul, dressed now in a jeweled turban and flowing, brightly patterned garments. The other was a huge bull of a man, with a thick black beard that fell to a bulging waist. His features were so profusely covered with hair, that little else than a red nose and beady eyes could be seen.

"That is Kasim," Zolara whispered to Heath. "Hold the ring in your hand so that you may understand what they are saying."

Heath fumbled in his pocket for the ring. Abruptly the hitherto meaningless jargon became understandable.

"The treacherous little cat!" Kasim was growling. "I'll slit her lying throat with my own hands when I catch her. Razul, we must recover that ring! Our lives aren't safe while she has it."

Razul spread his hands. "If I had an idea of where she has gone, I'd go after her at once."

"We'll use the lamp, of course, you fool," Kasim growled. "The jinni should be able to locate her. Here—I'll do it myself." The burly warlord reached out to a nearby table, and the lamp appeared in his hand, dwarfed by his thick fingers. He rubbed it gingerly.

The vibration and the crazy twisting of outlines seemed to worry Kasim. He shifted uneasily. The appearance of the jinni seemed to reassure him to some extent.

"Tell us where we can find Zolara," he snapped. "And be quick about it!"

The great face of the jinni seemed to blur momentarily, as though a fog thickened before it. Then it came back

into focus. Slowly a great arm came into view. The arm pointed.

"She is here," the jinni rumbled. "Zolara is behind that curtain!"

With mingled gasps of astonishment, Kasim and Razul whirled in the indicated direction. At that moment the curtain was torn aside, and from the alcove, features drawn and desperate, came Heath, the scimitar glittering in his hand.

"Hah!" Kasim cried. "So Zolara has enlisted a champion. Get him!" He heaved upright, snatching at a scimitar that had been laying among the cushions at his side.

"I'll put an end to you this time!" Razul snarled at the charging Heath. He reached for a blade of his own.

Heath leaped a divan, his scimitar flashing down. He had never used one before, but somehow he was able to handle the weapon he held. The ring clutched in his other hand was sending a subtle flow of power through his body, strength and knowledge that made him feel capable of anything.

Razul paled as the glittering blade descended toward him. Barely in time he managed to bring his weapon up and deflect Heath's swing. Growling blasphemy, Kasim was leaping forward, his sword raised for a vicious chopping stroke. But Heath continued his dash and swept past. Kasim and Razul checked the swings of their blades in time to keep from cutting each other down. As one they whirled to face Heath from the new direction.

HEATH was brought up by a wall. Eagerly his two opponents bore down upon him. Heath caught Razul's slash on his blade and ducked under a powerful swing from Kasim. He threw a shoulder into the warlord's bulging middle and sent him reeling backward, to stumble over a low table and fall flat

to the floor.

Heath swung around to face Razul. The movements of the battle had placed the other with his back toward the wall. With his attention concentrated on Heath, he seemed unaware of it. And as Heath's blade thrust toward him, he nimbly stepped back to avoid it. But he was stopped short by the wall—and the point of Heath's weapon went through him and grated against the paneling behind.

Razul screamed thinly. He clutched at his chest. Then his legs gave way and he fell forward and lay without moving.

Heath turned to face Kasim. But the warlord seemed aware that events had taken an unhealthy turn. He heaved his huge body toward the door, bellowing for help.

Grimly Heath followed in pursuit, hurdling divans and tables. He nearly reached Kasim. But the other did not allow panic to overwhelm his cunning. Scant feet short of Heath's descending blade, he reached the door and darted through and slammed it shut after him. Heath's weapon thudded harmlessly against wood.

"Guards! Guards!" Kasim thundered from the hall.

Zolara hurried up beside Heath. She slid home the bolt in the door and caught at his arm.

"Quick!" she said. "The lamp! Where is it?"

"I think Kasim had it with him," Heath said breathlessly. "But there's a chance that he dropped it somewhere."

He went swiftly over the scene of the fight, searching over the rug and among cushions. Zolara helped him.

They found nothing.

The girl made a hopeless sound. "Kasim has the lamp after all. We are back where we began. We cannot tri-

umph unless we have the lamp. And Kasim has been warned by our attempt. He will be doubly cautious now. . . ."

Suddenly the room echoed to a crash from the direction of the door. The guards Kasim had summoned apparently were starting to force it open.

"We must escape from here!" Zolara cried.

"But where?" Heath asked. "That door is the only one in the room—and Kasim's men are breaking it down."

He glanced at the door, biting his lip. Then his eyes lighted. He dipped into a pocket and found the ring and rubbed it hastily.

The swelling vibration was almost drowned out by the blows against the door. The outlines of the room twisted. When the great face of the jinni appeared, Heath spoke swiftly.

"Make us invisible," he said. "It is to end when I give a signal."

"I hear, and I obey!"

Moments later the splintered door flew open. A knot of gaudily uniformed soldiers burst into the room, pikes and scimitars gripped in their hands. Behind them came Kasim, his bearded features wolfishly eager. The eagerness vanished as he surveyed the apparently empty room.

"They must be here somewhere!" he roared at the bewildered soldiers. "Search the place! Find them!"

THE soldiers stirred into activity, peering behind furniture, tearing the hangings from the walls. Heath and Zolara skipped nimbly among them to avoid bodily contact, which would give them away. Grimly Heath moved toward Kasim, who had remained standing just within the doorway. He slid carefully around the other, then jabbed the point of his scimitar against the warlord's fleshy back.

"Quiet!" he warned. "One move and

I kill you!"

Kasim stiffened in horror, the rudeness draining from what was visible of his bearded face. "You!" he gasped. "But how? I thought—"

The soldiers ceased their search to turn at the sound of Kasim's voice. They stared at him in perplexity, seeing no one to whom his words might be directed.

Heath cursed under his breath and prodded the man again. "Careful!" he hissed.

Kasim fell silent. Then, as the soldiers resumed their search, he asked sullenly, "What do you want?"

"The lamp," Heath said. "Give it to me. You must have it in your clothing somewhere. Try any tricks and you die."

Kasim's hand made a motion toward the sash about his waist. He checked it.

"I . . . I don't have the lamp with me," he said. "I've hidden it away."

"You've shown me where it is," Heath said, his tone jeering. Keeping the point of his scimitar digging painfully into Kasim's back, he gave the signal which would make Zolara and himself once more visible. Then he reached around the warlord's side, feeling for the spot in the man's broad sash into which the lamp had been thrust. He found a hard lump, and eagerness shot through him.

A number of things happened at that moment. Heath became aware of the sound of rapidly approaching feet. At almost the same time he heard Zolara release a cry of warning. Turning his head he saw a second group of guards running toward the doorway in which he stood. And the first group, alerted by Zolara's voice, was now swinging toward him.

Kasim seized that opportunity to dart aside. He leaped beyond reach,

his hands fumbling at his sash. In another moment he held the lamp. He poised it purposefully, a hard grin making a fanged gash in his beard.

"Now you shall pay!" he growled.

In answer Heath's hand flashed up. There, glittering for all to see, was the ring.

Dismay wiped the triumph from Kasim's face. The guards swiveled their gaze from one to the other of the two objects, and terror dawned in their eyes. The two groups drew away from Heath and Kasim, crowding each other in panic.

There was a heavy silence.

Kasim's bulk shook with a sudden rage. He released a strangled, wild sound—and his hand darted down and rubbed over the surface of the lamp!

Taut nerves reacting instantly, Heath rubbed the ring. He waited tensely, features strained and grim.

The far-off vibration, duplicated now, rising. The weird twisting of outlines, centering about two focal points. Two great faces, each showing an awareness that something unusual was taking place.

"Kill him!" Kasim roared at the jinni of the lamp, pointing at Heath.

"Bring me the lamp!" Heath snapped at the jinni of the ring. Then he caught Zolara's hand and whirled out into the hall and began running. There were no guards there to stop him. The guards were already fleeing the scene.

The jinni of the lamp had started for Heath, but at Heath's last command it turned back to the defense of its vessel. The jinni of the ring, acting on Heath's command, had just plucked the lamp from Kasim's grasp.

The warlord suddenly realized what was going to happen. He bleated in fear and began to run. But it was too late.

The echoing vibrations rose to a piercing scream as the jinni of the lamp and the jinni of the ring met in combat. The room blurred, twisted impossibly. Terrific forces clashed and strained and tore, enormous whirlpools of energy that drew into themselves all nearby matter and crushed it and shredded it and hurled it away into the utter nothingness between planes. Kasim vanished, and with him those of the guards unfortunate enough to have been too close to the center of the titanic struggle.

Then the vortex exploded amid a shattering scream of vibrations. The building rocked. Within the room where the combat had taken place was only devastation and silence.

HEATH found himself lying on the floor of the hall. He didn't quite know how it had happened. All he remembered was a blast of sound and a tremendous wind that seemed to have thrown him off his feet.

Soft arms gathered around him. A small hand pushed the tumbled hair from his forehead.

"Oh, my dear one! Have you been hurt?"

Heath shook his head dazedly and managed a wry grin. "I'm all right, I guess. Just shaken up."

Zolara's arms tightened in delighted

relief. "You were so brave!" she said. "And you were very wise to remember that the jinni of the lamp and the jinni of the ring would fight to defend their vessels. They have destroyed each other—and Kasim with them."

Heath sat up in sudden alarm. "But that means the lamp and the ring are no longer of any use."

Zolara nodded her golden head, smiling. "Yes. Now they are nothing but empty shells."

"But . . . but how am I going to get back to my world?" Heath demanded.

The girl's face clouded. "I fear that there is no way for you to return. But is there any reason why you should want to go back to your world? Iljar is a very nice place. You could be very happy here. I would see to it . . ."

Heath looked at the girl for a long moment. His grin slowly returned.

"I could think of some reasons for wanting to go back," he said. "But I'd be a darned fool if I did!"

Some time later the guards returned to peer curiously into the hall. They raised their eyebrows at what they saw.

"This is your new master," Zolara snapped at them. "Render him due homage, or he'll give you what he gave Kasim!"

The hall rang with the echoes of foreheads thudding against the floor.



CALCULATING GENIUS

By Ramsey Sinclair



THE name of a poverty-stricken, completely obscure little German astronomer, Johann Kepler, is immortalized in the famous "Kepler's Laws" so well known to every student of astronomy. But it is not so well known that he was a theoretician who knew how to use the data provided by others and to do it brilliantly.

He became a student and assistant of the famous data-gatherer, Tycho Brahe, and when the master died, Kepler found himself unable to handle the scientific instruments because his forte lay in theorizing not measuring. So he set to work to show that the vast volume of observations col-

lected by Brahe could be beautifully analyzed into an exact description of the way in which the Solar System was put together. Brahe believed that the planets circled the sun in perfect circles. Kepler showed that Brahe's own accurate observations made it necessary to assume an elliptical orbit rather than a circular one. And as we know, this is true.

Kepler's Laws are fundamental in astronomy. They are characteristic of one type of scientist. Some are experimenters; others are theorizers. Both are necessary to the advancement of science.

* * *

ON THE BACK OF A



By R. K. DIRK

Tita had faced an ambush of hired killers and defeated them—but could he face the full wrath of Kola's hordes? . . .

THERE was a low rolling sound, as of thunder, and the fading sun threw small lances of flame from behind the dun-colored dune to which Tita's eyes were directed.

Tita lay pressed close against the small hump of sand. The dapple-grey mare was stretched out beside him and Tita's hand was held close against the mare's nostrils. The wind was blowing in their direction and the mare's ears

were pricked stiff against its head. It had gotten wind of something. That was why Tita held its nostrils, so that it couldn't whinny a warning or welcome. Tita was curious about those odd lights and the sound.

He had not long to wait.

A file of horsemen had appeared on the smoothly rounded shoulder of the far dune. Tita's eyes widened as he continued to watch and saw that it was

Beetle



Tita stood over the dead bodies and tensed himself to meet the attack of the remaining two . . .

not just a stray party of desert raiders or caravan guards. They were too many. And they were not dressed in the fashion of men Tita knew.

He lay for a long time; until the sun sank below the horizon, and the mare, restive under his restraining palm, suddenly leaped erect and shook itself. Then Tita stood also and clucked for his horse to come to him. He did not know who these men were, but he also knew that whoever they were, they could do him no good.

For Tita was an outlaw. And the hands of all men were directed against him.

He leaped upon the horse with an effortless motion that was as fluid as water, couched the long, steel-headed spear in the leather thong against the fibre saddle and turned the horse's head toward the crags and saw-toothed ridges of the mountains in the near distance.

The mare held an effortless pace, galloping smoothly across the cooling sands. Tita's body was relaxed; he seemed part of the horse so easily did he sit in the saddle. But though Tita, to all outward appearances, was bent only upon reaching camp for the night, within his breast there raged the consuming fires of a vast curiosity.

Who were these strangers? They were armed and many, for though he had lain a long time watching them, he had not seen the last of them. Where were they bound for? Tita puzzled over the questions they had brought to his mind until he almost came to the conclusion that they were a mirage he had seen and nothing more.

And suddenly all thoughts of the strangers were wiped from his mind. Something more urgent and vital was brought to his attention. The mare's head had lifted and once more the ears, those never-failing signposts of danger,

were standing stiffly erect.

Tita's hand slid down to the spear and loosened it. He kept turning his head, left and right, his eyes narrowed against the sharp desert wind and particles of sand which flew about. Danger was afoot—or ahorse. He sawed gently at the reins, slowing the mare's gallop to a canter.

Somewhere among the gullies to his left was the camp of Horta the thief. To his right were the wastes of the lava beds and serrated beginnings of the vast spinal column that was the mountain ridge. Ahead, silver in the early moonlight, gleamed the smooth bed of the desert, hard and smooth, firm to the horse's hoofs. Tita didn't look behind him. It was not in his code to ever look behind. What has been has been, he had always said.

Tita's knees, firm against the flanks of the mare, felt a quick stiffening of the muscles there. And in that split second before the mare whinnied, he had leaped from the animal's back, spear in hand.

FOUR figures rose from the sands along the rutted path. Silently and viciously, they set on him. And as silently, were met by a something more vicious, more powerful than anything they had ever dreamed could come in the guise of a man.

The moonlight danced from the head of Tita's spear. For the man confronting Tita, it was a dance of death. A streak of moonlight ran down the slender, needle-pointed head and ended flush with the dirt-encrusted throat. But the spear's point had not just ended there. It had gone beyond! Like the flick of lightning that impales the tree, it had struck and having performed its mission had gone to greener, more fruitful pastures.

There were four who had attacked.

But in the time it takes to count two, there were only that many left who stood to face the phantom who danced like the wraith of death, beyond *their* reach, although they were not beyond *his*! That spear was like a living thing, having a volition, a life of its own. It was as if it controlled the arm. For of the two who had been left in those first few seconds, one came from the rear. And just as the assassin lifted a short, heavy-bladed dirk above his head, Tita whirled from attack to defense and stepped forward, the spear held crosswise in his two hands. The knife fell across the haft of the spear. A snarl of pain came from the attacker's lips and the knife fell from numb fingers.

The man stooped to pick the knife up and Tita brought the smooth butt of the spear hard against the bent head. There was the hard sound, sharp on the desert air, as iron-hard wood met the bone of the skull, and without a sound the man fell senseless to the sands.

Only a few seconds had elapsed while Tita took care of one. But they were enough for the last of the ambush to get in his work before Tita could turn. The lithe, dancing figure of the youth staggered under the sudden weight of the strange body on his back. Fire rode a piercing streak under his ribs and along his shoulder blade before he could do something about it.

The one-sided fight had raged under a silence that was unnatural, for they had come seeking his life. And since their stealth had gained them the surprise they wanted there was but little reason to continue it. Yet the only sounds that had been made were the grunts and low moans that men make in hand to hand combat.

Now from Tita's lips there came a high sound, like the whine of an animal. It rose on the air in a piercing intensity that raised the hackles on the neck of

the man who was on Tita's back. The fury that had raged in Tita's heart was as nothing compared to the feeling of madness that engulfed him now. He twisted suddenly and with the same motion leaped from his feet. The man on his back dropped the slender-bladed knife and held desperately to Tita's shoulders. But it was a losing effort.

Tita's feet came to the sand only to leave the earth again. Once more he twisted in mid-air. And this time the man on his back went twirling off. Before the attacker could regain his balance, Tita was on him. Moonlight highlighted the terrible look in the youth's eyes. The lips were drawn back in an animal snarl. And the white, even teeth grinned in a grotesque grimace of hate. That was all the man saw. For in another instant Tita had leaped on the other.

Steel-sinewed fingers clawed their way around the scrawny throat of the man who had been thrown from Tita's back. They were like wires wrapped around the tight-drawn skin. The faint moan that came from the back-drawn lips died before it became more than a whisper. The only sound was the sibilant scream that rose on the desert air from the lips of Tita. And in a few seconds, that died too.

TITA, breathing heavily, stepped away from the stilled body of the man on the ground. He blinked his eyes as though he had just been awakened from a deep sleep. Suddenly he whirled at a sound coming from somewhere to his left. It was a deep groaning sound. For a second his eyes showed a puzzled wonder. Then realization came to them. The man he had struck with the butt of the spear was not dead. The blow had only knocked him out.

Just as well, Tita thought. I wonder who had sent them?

He stepped to the fallen man's side and gave him an arm. Reluctantly, the other accepted Tita's offer. When he came to his feet he stepped away from the youth. Tita smiled a shallow smile and advanced on the other, who continued to step back.

"Stand still!" Tita said softly. "I won't harm you. That is unless you decide not to talk."

"I'll talk," the other said surlily. He had stopped his retreat at Tita's words and stood still. But there was that in his face which told Tita it wouldn't take much to make him talk.

"Well?" Tita demanded.

The other licked his lips, turned his head from left to right several times as though he were looking for a place to escape to, then brought his attention back to Tita. Once more he went through the lip-licking ceremony. All the while Tita stood, silent and watchful in front of the other.

"She—" the squat-shaped figure began. "She commanded us to do it," he continued quickly. "You know what that means. She would have thrown us to the animals in the enclosure."

Tita regarded the cringing figure with scorn. But he wanted all the details. He held his silence and waited for the other to continue.

"I didn't want to. Especially when she said dead or alive. But what could I do?"

"How did you know where to look for me?" Tita asked.

"Gora there," the man nodded his head toward one of the corpses, "knew where Horta's camp was . . ."

"Then why did she send only you four?" Tita demanded.

The other looked blankly at Tita. It was evident that the question had never occurred to him. His brow knit in thought giving him the look of some animal going through the processes of

mental evolution. Tita didn't wait for the reason to come to the other.

"So you lied," he said quietly. "You were sent to kill me."

"I swear," the other said desperately. "It was dead or alive."

"But better dead," Tita said.

There was a short silence while they eyed each other. Then Tita made his mind up. He had been wondering what to do with the man. He knew he couldn't kill him in cold blood. There was only one thing to do. Take him along to the camp of Horta.

"Do you have your animals with you?" he asked.

"Yes. They are tethered behind that clump of bushes," the other said, gesturing with a thumb to some shrubs a few yards in the rear of where the fight had taken place.

Tita retrieved his spear and gestured for the other to lead to where the horses stood. They walked past the mute and motionless figures of the fallen men without a second glance. Tita had his eyes glued to other man's back. The one in front walked with head bent as though he were bearing a weight. So it was that neither saw or heard the fiery thing falling from the heavens. It was as fast as light. And only for the barest second did Tita know that it was there. Then it landed with an earth-shaking roar and the flash of a thousand sheets of lightning rolled into one.

TITA saw the ball of fire. The earth shook beneath his feet. There was the sound of thunder in his ears. And in his head there was a vast whirlwind of sound. That was all he knew for a time.

Tita rolled over on his back and stared at a grey sky. The stars had already faded from view. He wondered in an abstract way how it was that he had fallen asleep. His nostrils twitched

as a strange odor came to them. It was a peculiar odor. He had never smelled it before and could not quite identify it. He felt oddly tired. As if all his energy had been expended in some terrific labor. And most strange of all, his mind seemed numbed. There was something he knew that he had to remember. But what?

A small sound of protest came to him from somewhere to his left. It was a complaining grumble, yet without any accents of anger. Slowly, Tita rose to his feet. The sound made him curious. He wondered who the author was.

He walked toward it, his spear trailing in the dust behind him. And as he walked he heard the muffled hoofbeats of a horse somewhere in his rear. He didn't turn. The only thing that interested him was that sound.

There was the gentle slope of a small hill he had to cross. And when he reached the crest he saw a strange thing, the strangest thing he'd ever seen. Only it didn't register on the numbness that was his mind. As far as he was concerned he was looking at an immense boulder, smoother perhaps than any he'd ever seen before, but only another boulder. Nor did he find strange the two people standing beside the boulder.

A man and woman stood beside the huge, smooth ball. They were facing each other. They did not hear his approach, for Tita walked with the silent tread of a forest animal. He was almost at their side before they realized the presence of a stranger. Simultaneously, they turned and looked at him.

Tita also stopped and regarded them gravely. The tableaux held for a few seconds, to be broken at last by the woman.

"Well, Dick, at least there is human life here."

The man grinned ruefully and an-

swered:

"That's nice. Our expedition was a success. We found human beings on planet, Z. Richard Wharton and Nora Gayes, Earth people on expedition 223 discover life can be wonderful on planet . . ."

"Z," Nora said. "And you don't have to tell me the rest. That the atomic generator is on the fritz, and that we are stuck here. Suppose we ask our silent friend, here, who and what he is? Well, don't stand there. Ask him?"

Tita looked blankly at the man. He understood the words the stranger was addressing to him. Only they didn't make sense. What did he mean, "Where are we?"

Tita continued to puzzle over the words while the two regarded him with odd looks of bewilderment.

"Maybe they don't talk," Nora said after waiting a few minutes.

"Mean I'll have to use sign language?" Dick asked in a plaintive voice.

"If we want to eat, you will," the girl replied.

"Hey!" Dick suddenly yelled. They hadn't noticed that Tita had turned and was starting back to where he had come from. But the tall, muscular man continued to walk. Dick ran after him and grasped his arm. And Nora screamed in anger and consternation.

TITA had whirled as Dick placed his fingers on his arm and had thrown Dick to the ground. There was no question in Nora's mind that he was going to try to kill Dick. Stooping, she picked up a small, pointed rock and ran to Dick's aid. There was a dull thud as the rock made contact with Tita's skull. Slowly, the half-naked man rolled away from the prostrate figure of Dick.

"Thanks," Dick said in a thick voice. "That guy was after my blood. Wow!

Talk about fingers of steel!"

"Dick!" Nora said in a low voice. "I think we'd better go back to the ship and take some of those atom pistols."

And once again Dick smiled ruefully. "Won't do us any good, tutz. I forgot to charge them. Of course if we had water, why, ha-ha. We could use them as water pistols."

"Oh fine," the girl said. "That's all we need here. Corny humor."

"Who—who are you?" a voice broke in on them.

They turned and Dick backed away a little. After all, if this savage was going to play the harp with his wind-pipe . . . But Nora held her ground. And when Dick saw that the savage had no intentions of attacking them, he came to stand by the girl.

"Who are you? And how did you come here?" the young man asked.

Nora had been studying him. She became aware of the fact that he was by far the handsomest specimen of manhood she'd ever seen. Maybe a little dumb. But anybody that good looking didn't have to have brains. And what a body. She whistled shrilly as she permitted her glance to travel across the six-foot frame of brawn and muscle.

"All right, baby. Keep it clean," Dick said suddenly.

She smiled a beautiful smile and Dick likened it to that of a cat who has seen a picture of cream before it. He realized his own frailty in the matter of bodies.

"You two can talk, can't you?" Tita asked. There was an ache at the back of his head. But everything was clear. Everything except these two. There had been a flash of lightning from a clear sky, the sound of thunder, and he had fallen unconscious. But now he was clear in his head. Only where had these two come from. Never had he

seen anyone dressed as these.

"Just don't get this gal started," Dick warned. "She was weaned on a dictionary. Let me present ourselves. This is Nora Gayes, daughter of . . ."

"Peace," Tita broke in.

". . . It's wonderful," Dick said in a low voice.

"What is this," Nora asked, "Father Divine's heaven?"

Never had Tita heard so much talk from anyone as from these two. Their mouths were never still. Suddenly the two in front of him were forgotten. A strange sound had come to him. It was the low sound of many horses on the move. And they were coming from all around them.

"Something wrong?" Dick asked.

There was an answer to his question almost immediately. As if by magic a vast circle of horsemen made their appearance as if from the bowels of the earth. Tita threw his right hand upward, the universal sign of peace. He had recognized them at once. The same men he had seen last night. Those wide capes, the conical-shaped helmets, the lances. There was no mistaking them.

THREE men broke from the circle in front of them and approached on foot. Tita's hand was still upraised. The three walked around Tita and the others as if they were some strange animals they had never seen. Then they stood apart and examined them from different angles.

"Now I know how Uncle Tom felt," Nora said.

"They speak our tongue," one of the three dismounted horsemen said.

"But I do not recognize them," another said. "The tall one is of the desert, but these two . . ."

The third said, "Well. No need to waste our time with them. Let us put them to death and be on our way. Kola

doesn't like for his scouts to dawdle."

Nora let out a screech of horror as the three slipped gleaming curves of steel from scabbards hung on their girdles. There was no mistaking their intentions.

"Now look fellas," Dick said, throwing up a hand in a gesture. Nora had run behind him and was hanging on to his belt with frantic fingers, as if there was a property in it that would enable them to fly away on it.

"They are harmless," Tita said placatingly. "And perhaps your master might want to see them. As for me, I know the desert as I know the palm of my hand."

There was one who was tall and skinny. He seemed to be the leader of the three.

"Perhaps the youth is right. As for me, I've never seen such as these. Sheath your swords. What are you called?" he asked Tita.

Tita told him.

"How is it that you are with these two?"

Tita told him what had happened the night before.

For the first time the strange horsemen noticed the metal ball in the hollow. Exclamations of wonder came to their lips at the sight of it.

"By Kola's beard! I *am* glad I held my sword hand. Kalo will reward me greatly for this," the skinny one said.

Turning to the others he issued orders and in a few seconds horses were brought for Nora and Dick. Tita whistled shrilly and his mare, mane tossing wildly, came running from where she had hid.

Then they were a part of the wild troop. Now that their capture had been effected there was no need for secrecy. And the horsemen galloped off, shouting wildly and brandishing their weapons above their heads. Then one of

the three who had approached them, lifted his voice in song. It was a wild tune whose tenor dealt with death and how wonderful it was to die with a sword in the hand.

"Reminds me of that televisor hero," Dick grunted as the horse jolted him about. "Good old Eddy Nelson and his chorus. Maybe we never left the Earth at all. Maybe . . ."

"Maybe you'll stop dreaming—uh," Nora groaned. This wasn't like riding on the smooth bridle paths of her father's estate.

For the first time since she and Dick had entered into their mad escapade, she began to have misgivings about the whole thing. It had all started with Dick's father, a well-known physicist, and her father, who was head of Inter-Planets Inc. a huge freighting outfit whose dealing were with the planets in the Earth's universe, having one of their talks about how soft the modern generation was. How *they* were pioneers and how tough it had been for them.

NORA and Dick had gotten fed up with it. Dick's father invented a new type space ship. It was operated on a new principle, one of renewed atom power, a chain reaction type. He had planned to investigate a planet discovered in the far reaches of outer space, a planet called, Z.

Nora and Dick had decided on the spur of the moment to beat the others to it. They were both experienced space pilots. And neither thought anything could go wrong. But something did. The Ato-indicator had flashed a warning after they arrived in the planet Z's atmosphere that something was wrong. The tiny generator, the heart of their power plant had gone haywire. Only the emergency plant had enabled them to land safely. There was no way for them to leave the planet.

All this, as though it were a picture, ran through Nora's mind while she galloped along in the wake of the others. But it was an incomplete picture. She didn't know the end. All she knew was that she and Dick were in the hands of some mighty bloodthirsty individuals.

She looked about as the ride progressed. The scenery reminded her of the badlands of Utah. The same wild, rugged mountains and desert. The same vastness that had always made her feel man's smallness. Fear made a heavy lump in her heart.

She felt the nearness of someone. It was Tita. She watched him from the corner of her eye. Never had she seen such a horseman, or such a perfect body. It thrilled her just to watch him. And she could see his openly curious look on her.

She decided to talk to him. But before she could get the words out of her mouth, the leading horsemen reigned their steeds to a halt.

Dick, riding on Nora's flank, had not noticed the byplay of interested glances between the girl and Tita. He had once been on the moon, and this wilderness of rock and barren ground, this vast stretch of rolling sand, reminded him of the moon's reaches where nothing lived. Despite the flippancy of his manner, there was an underlying shrewdness and keen perception to his mind.

He had breathed a sigh of relief when they had landed safely. Yet even when he had busied himself in the tests which determined whether planet Z had an atmosphere capable of sustaining human life, he had not permitted the seriousness of their plight to show in any way. The arrival of Tita on the scene had proved that men were to be found who were normal in appearance. Then the strange warriors came. And Dick knew that there were men who

lived a wild, warlike and precarious life. Further, there seemed to be a pattern to their way of living, even if it was only that of waging war and death on others. For the very act of war entailed the use of the brain. And since reason had something to do with their lives, then they might be reasoned with.

By the very manner of these riders, Dick saw that they were the masters of all this wilderness, for they rode care-free and without watch. Dick saw the long line of tents long before Nora knew they were even approaching their destination.

He reigned in beside the girl, as the horses came to a panting, dust-swirling stop. And saw that the strange man who had attempted to kill him, was on her other side. Tita grunted something when he saw the circle of human heads before the dead embers of what had been a large fire.

DICK'S face took on a lemon hue, and he spurred his horse close to Nora's side. The girl, seeing the blood-caked grisly heads, choked back a horror-filled scream. But no amount of control could prevent the involuntary shudder which swept her frame.

Tita had recognized the decapitated things. In life they had not looked much more prepossessing. Death only gave them a more grotesque look. The heads were all that remained of Horta and his outlaws. Not one had escaped. Tita wondered how it had happened that they had been surprised. Usually a guard stood at a vantage point, ready at the smallest suspicious sound to warn the rest. And this Kola, the skinny one called chief, commanded an immense number of mounted warriors.

But they were dead. Horta's value had vanished with his death. Tita's glance swept over the vast encampment of tents with an ever-increasing look of

wonder. Never had he seen so many tents or horses. It was as large as the city he had been forced to flee a year ago. As far as his eye could see the cloth immensities of the pyramid shapes stretched. And he saw how it was that only a discerning eye could tell that the ridge they had been placed on was different than any other ridge. Their color had been blended so that from any distance they resembled the dun-colored earth.

"Wh-what do you think they'll do with us?" the strange girl asked.

"That is in the lap of Kola," Tita answered with indifference. "Probably put us to death."

"You mean we have a choice?" Dick asked.

Nora got the irony in Dick's voice but it was lost on Tita. The niceties of language were beyond him. What a man said was what he meant. And he answered accordingly.

"Usually the enemy gives a man his choice of death," Tita said. "Of course in our case it may be different. He did not capture us in battle . . ."

They had been carrying on their talk while surrounded by a circle of mounted warriors. The greater part of the scouting party had disappeared in pursuit of whatever duties they had to perform. But enough men had been left to make any attempt on the escape of the three an impossibility. The three men, the skinny one in the lead had ridden down the long line of tents until they reached the most magnificent of them all. It was as large as a house, a huge pyramid of canvas that covered a hundred square yards of ground.

The tent was the center of a great deal of activity. About its front was clustered some thirty or forty warriors, in the various dress of the tribes Kola had recruited on his crusade. They made a colorful foreground to the som-

ber-colored tent. Just beyond them and slightly to the rear was the barracks, a group of ten circular tents. These housed the more important members of the ten tribes, of which Kola's was the most important. Here also, were housed the captains who served directly under the chief.

The three men, the skinny one in the lead, walked through the large group of warriors, some of whom greeted them, but most of whom gave them empty stares. There was an immense square of carpet on the ground before Kola's tent-palace. And standing guard before the open flap were two immense half-naked men, each armed with the curving sword that was part of their armament. The two guards dropped their swords across the path of the three and one asked the reason for their coming. The skinny one said:

"We have come bringing news to the mighty one."

THE swords came to rest again on bronzed shoulders, and the three went into the cool interior.

Ramduk, second in command, leaned his head close to that of his chief and whispered:

"Mighty Kola, think you that these strangers are spies placed here in our path by the woman who holds the city of great wealth?"

Kola smiled, and the bristling scimitars of his black mustache curled away from the knife-edge lips, revealing even rows of white teeth. His eyes were half-closed, slanting bits of obsidian shining from under the lids.

"How well I remember, Ramduk, the city of my youth," Kola said. "It was a city of learning, of peace and contentment, filled with people whose only aim in life was to be at ease and know happiness."

"Many wise men came there for it

was a city that held much in the way of knowledge for them. I was little more than a child at the time. And I walked upon the quiet street and came to one who was old and wise. I sat by his side, for as I say I was young and knew no humility, so I did not know his wisdom and the reason why others had gathered to hear him. But like the rest, I sat and listened. He spoke of life and death. I have forgotten all of what he said. All but this. That war is like the storm, the lightning and thunder and hail and rain. And the terror of it is great, as is the damage. But like the storm it must end. Then there is peace. But always there are storms.

"That very afternoon, almost at the sun's setting, a storm came to my fair little city. I hid from it, in one of the cisterns in which was gathered the water for the people's drink. It was my home for three days and nights. It sheltered me and gave me drink. But it did not shut out the sights and sounds of what was going on above. My ears and eyes knew the fire and fury that consumed my city. It was dark down there and I was small, so that it was not strange I was not seen. Many were the warriors who came to the lips of the cistern and polluted the waters below. But the thirsty will drink anything. And I was consumed by a raging thirst. Aye, Ramduk, I drank of their filth. It nurtured me and became part of me.

"So that when they left and I was able to climb out and look upon the ravage they had done, I seemed to have become a something that was part of them that I had drank and had forced between my lips.

"Of the forty thousand people who had lived in that town not a single human was left alive. I said *human*. For I was no longer that. I was an animal, a *being*, a will that had somehow survived so that someday I would wreak

vengeance on those who had done this. But there was one who was still alive. The old, wise man I had listened to in the eternity of my past. He told me with his dying breath who had done this.

"Do you know who it was, Ramduk?"

RAMDUK'S handsome saturnine face showed nothing of the surprise he felt. He had never even wondered why Kola had set out on his war of conquest. He felt it was not his duty or place to either question or wonder as to the reasons of the great one. So he waited, his features impassive, for the tale to end.

"It was the father of the woman whose city we shall ravage, as he ravaged mine," Kola continued. "Think of it, Ramduk. Here was a man who had had a dream in which it was told to him that he was to be the conqueror of the whole earth. And in his march, from one sea to the other, goes a hundred miles out of his way, to ravage and burn a town. Why? Because in this town was a wise old man who had said that his conquest would only end in death. But all men die. What was so prophetic about that?

"And what did his power gain him? A power exceeded only by his tyranny. A watery grave by the sea on whose shores his vast army became driftwood in the tidal wave that engulfed them. The Gods laughed that day when they let loose the storm which made his dream of a place at the sides of the Gods, an empty delusion. The waters rose, those who watched say, as if it had a will of its own, and washed over the hosts of this man. And when the waters receded, there was not a single man left.

"Yet though *he* died he had left behind smaller men who acted in his

place. It was upon these and one other that I grew up to wreak my vengeance on. That, Ramduk, is what motivates me. Vengeance! And I have been revenged. On them all. All but one. That is why we are here on this desert plateau. For beyond it lies the city which this man built and which his daughter, the only one of his line, rules. He was a strange man, temperate in all his living, so that there is a single progeny, despite the fact that the women of the world were his for the asking. Well, Ramduk, the jackal, Syla and his twin brothers are waiting for their rewards. Arise, Syla and stand before me."

The skinny one stood up. He had told his tale and retreated the forty paces that was the rule when Kola gave audience to his men. He and the other two had fallen on their knees, faces pressed to within inches of the carpet, and waited for Kola's decision. Now he had spoken. Syla stepped forward and waited with bated breath. It was well known that the mighty one gave good rewards.

"I should have your eyes out and your ears clipped," Kola said, and smiled shallowly when the skinny one's face paled to the color of ivory. "My orders were to take no prisoners. But these strangers interest me. Therefore take the woman, the one whose man died in battle. And tell the captain of your tribe that the two who were with you shall have a small prize also. Go, now, and bring the prisoners to me."

Syla left, his breast filled with exultation, his eyes agleam. She had looked on him with interest. He knew that she would not mind the exchange.

"... and remember to kneel before the mighty one," Syla said in final instruction as he stood beside the prisoners before Kola's tent.

Dick shrugged his shoulders in a gesture of helplessness. Nora, pale and badly frightened could only sigh. But Tita merely grinned in a tight-lipped way. He thought he knew the end. Death, of course. It was to be expected.

NORA felt a let-down as they began their march to the two men at the other end of the tent. Not that she had expected pomp and circumstance. But this emptiness was something that did not jibe with what she thought should be in keeping with power. There were no decorations, no courtiers, no women. Just two men, one seated on a sort of heavy chair, plain of ornament. Nor was it on a dais. Then they were within the forty feet that Syla had mentioned to stop in.

Dick started to sink to his knees and as quickly stopped his move. His arm slipped around Nora and so they stood, shoulder to shoulder. Tita gave them a quick glance from the corner of his eye and smiled grimly for a second. Then the small man on the chair was talking.

"So you two are the ones from another world, eh?"

Dick was surprised at the softness of the man's voice. He had associated Kola with violence, after seeing the decapitated heads and so had assumed for him a character that was different than the one he was facing. He had thought Kola would be a large man; this one was short, slender. He had thought that the man's bearing would perhaps be regal, or sinister, or horrible; it was none of these things. Indeed Kola looked like a weary ascetic, with his long, narrow head and thin, boyish body, on which the leather armor looked heavy. But it was in the face that Kola's character was to be read. The lips, full and a little pouting, held overtones of ruthlessness in the

corners, where tiny creases showed. And the eyes, slanting and feminine in appearance, held their glances in speculative look. Only the chin showed strength. Its heaviness seemed out of proportion to the rest of the face.

"Well!" Kola demanded. The soft voice had hardened a bit.

Dick began, fumbled for words. "I don't know what we walked into, Miss Gayes and myself; my name is Wharton, we pulled a fast one on our respective patrons, and sort of absconded with papa's new space ship. Does that make sense to you? Well, it did to us, when we pulled the abduction. So off we go and . . . Boom! Here we are. With no way of getting back because the Ato-generator is on the blink. Well, along comes this desert cowboy and your playmates and here we are. Sounds screwy, doesn't it?"

"Peace," the man who was standing by the chair of Kola, said.

"It's wonderful," Nora said.

"Amen," Dick completed the formula.

Kola's eyes had widened in amazement as Dick had recited the tale of their adventure. Never had he heard such talk, almost none of which made sense. Yet it was obvious that the two were strangers, at least in appearance, to anyone Kola had ever seen. They were both dressed alike, though it was obvious one was a woman. They each wore a cloth helmet, a close-fitting garment of one-piece material which covered their bodies from shoulder to ankle. A leather belt divided the garment neatly in the middle. Leather sandals were on their feet. But in their mouths was talk such as had never been heard before, and yet, which intrigued the ear.

"Go on," Kola said.

But it was Nora who took on where Dick had left off. Kola's command had

left Dick speechless.

"Dick is trying to tell you that we are from another world, another planet and that we are stranded here. We don't know how we are able to speak your tongue, although I have heard some scientists declare that all speech is an auditory illusion, that we hear and talk with our minds, as a consequence of which it can be argued . . ."

"Aw now, Dora," Dick broke in. "I don't think they'd care to hear any of your pseudo-scientific ravings."

THE two heads swiveled back and forth, from Nora to Dick as each took on the burden of the conversation. Even Tita who had an inkling of their gabbiness was held entranced by their stream of words.

"Peace," Ramduk almost shouted.

"It's wonderful," Dick said.

"Amen," Tita said unconsciously.

"Say!" Nora demanded. "What gives with this peace business? Father Divine died a hundred years ago. And I'm sure this isn't his heaven. What do you mean by peace?"

Kola's answer was stilled at the unexpected arrival of a man, who had run into the tent and up to where Nora and the other two were standing, and had thrown himself flat on his belly, his head lifted a few inches from the ground.

"Oh mighty one," the stranger called. "Hear me, oh mighty one."

"I listen," Kola said.

"The advance party has sighted the city of Sama!"

Kola leaned forward, his face alight and his mobile features working under the strain of his excitement.

"Yes? Go on, idiot."

"It is on a level piece of ground. Four walls surround it in a square, and beyond those, four inner walls. To the rear, a river. Before it, nothing. But

the attack can only come from the front."

"How so?" Kola demanded.

"To either side of the walls is a vast marshland that extends all the way to the river. Neither foot or horse soldiers can find footing there."

Kola turned his face toward Ramduk and whispered, "Have the two men placed with Syla and his men. The tall one can be put to use, if what he says is true, that he knows this country well."

Ramduk nodded and stepped forward, saying:

"You two come with me. The woman will remain here."

"Over my dead body, she will," Dick said, assuming a pugnacious attitude.

"And it will be," Tita cautioned. "Don't worry over her. It has never been told of this Kola that he is depraved.

"Yeah, but . . ." Dick began. Then Ramduk was at their side.

"Come," he said. And the two came.

"There is nothing to worry over," Kola said in amusement, when he saw the look of consternation in Nora's eyes, after Dick and Tita left. "It has been a long time since I've talked to a woman. And now I have one before me who is from another world. Surely . . ."

Nora smiled in relief. This Kola egg didn't seem like a bad guy. Then she remembered the heads. And that sick feeling stole over her heart again.

Kola stood erect, stretched his arms above his head, and sighed. These women. They were all such animals. Yet . . . he sighed again and said:

"... you wouldn't want to be placed in the common compound with the rest. I don't think they are . . . Well, they are the women who are the camp followers."

Nora gasped at the implication.

"Come," he said, walking toward what Nora saw was a partition in the

tent. Slowly, as if she was hypnotized, she walked forward and stepped within the inner room.

HORSES neighed wildly in excitement, men ran about, others were busy adjusting saddle girths, making sure that their armor and weapons were in shape, and still others clustered in small groups about their officers, listening to last minute instructions.

Dick stood beside Tita, round-eyed in wonder. Syla came running over as the messenger whom Ramduk sent to him gave him the message. He stabbed his arm at his forehead in salute. Ramduk's orders were terse and to the point:

"These two are to go with your party. Guard them well. You and your men will lead the advance. If you arrive before dark, wait up for us. But if you meet up with any suspicious body of troops, come back."

In a short while Dick and Tita were galloping along in the wake of a hundred other mounted horsemen. The sun was at the midpoint and the desert stretched out in its interminable flatness. They seemed to be the only ones alive in all the desolate waste, the only things that moved or even breathed.

The horses held an even pace. And after a while the monotony of the gallop lulled the pain and discomfort Dick was experiencing. But Tita was alive, alert in every sense to what was going on all about him. Not alone to the men with whom they were riding, but also to the desert and the messages he was reading in the sands.

For here and there were to be seen the tracks of where other mounted men had ridden. There were the tiny openings, where the desert rat hid. And once they passed the skeleton form of an animal or man. Then to his nostrils, ready to assimilate the odors and

classify them, there came the smell of vegetation. It had a rank odor. As if it were swampland.

He knew then that it would not be long before they reached the stretch of quartz outcropping that heralded the end of the desert. Then would come a barren stretch of rock, which in the end would give way, abruptly, to a fertile plain. The city of Sama was at the end of the plain.

Tita knew he had to escape before they reached the plain.

There was only a single place where that could be effected. When they reached the outcropping the horses would have to slow to a walk. For the quartz made impossible any other gait. There was a path, the very one he had used to escape from the men Marga had sent to capture him, which would lead him to the plain. He still had his mare; he was thankful they had permitted him to keep her, and she could travel that path with her eyes closed. It wouldn't be long now.

Suddenly he looked at the stranger riding at his side. He knew that it would be death for him. He resolved to take him along. There was only one way. The mare had to carry both. But it wasn't impossible.

DICK forced his mind to stay alive.

The rest of him seemed dead or in limbo. He heard, dimly, the voice of Tita calling to him:

"I am going to escape from these, soon. You have your choice. To come with me or die. For when I escape, they will put you to death."

Dick turned bloodshot eyes, red-rimmed and weary toward Tita. He looked as if he didn't understand what the other was talking about. Then the full import of what Tita said came to him.

"What—what about Nora?" he

gasped.

"She will be safe, I think," Tita answered.

"You think! That's no good. I've got to be sure," Dick replied.

"Dead, you will be of no use to her," Tita said.

Dick took only a few seconds to think that over. Tita was right, he realized. No matter what happened to him, he had to trust to fate that she was safe. And perhaps . . .

"When?" he asked.

"In a short while," Tita said. "We'll have to ride double. Your horse will throw you on the quartz bed."

Dick began to wonder as time went by interminably, what Tita meant by a short while. The constant glare of sun on sand made it more and more difficult for him to concentrate his attention on what lay ahead. Besides which, he was beginning to have visual illusions. Once he was sure he saw an oasis, complete with palms and women clustered about its well. And another time he thought he saw a ship, an old timer, with all its masts furled with sail, and keeling over in the grip of a strong wind.

Then, with a suddenness that was startling, the leading horsemen came to a plunging halt, and from their mounts screams of pain rent the air. They had arrived at the needle-sharp quartz beds.

"Here!" a voice at Dick's side commanded.

Dick looked wonderingly at Tita.

Tita saw that Dick was dazed. Realizing talk was useless and that Sylva would be riding back to them to find out if they could get around this obstacle, Tita acted swiftly. Gripping Dick about his waist, Tita pulled him from his horse and onto the mare. Then setting his heels sharply into the sweat-stained sides of the horse, Tita set off down the faint indentations of the all but invisible path.

A LONG time afterward, how long Dick had no way of knowing, they stopped before a rank-smelling swamp-land. Darkness had fallen. The swamp glowed strangely and smelled evilly. But they were safe. There would be no way of tracing them in the darkness. Dick was sitting, his back against the bole of a tree. Tita had tethered his horse and was standing beside Dick.

"Y'know," Dick said, "I don't know about you people, but we get hungry. The only food I've had has been the concentrated variety. And let me tell you, pal, there's not a heck of a lot of nourishment in capsule, No. 26, vitamins A, B, C, D, and the new one X. So just give me a straight answer and tell me when do we eat?"

"Soon. But what difference will it make?"

"Say! Are you daffy? What do you mean, what difference will it make? Think I can go for weeks without eating?"

"We do," Tita said as if he was surprised that there were those who didn't. "But perhaps the *teena* plant does not grow in that strange place from where you come?"

"Br-other," Dick said, his voice tremoloing. "Plant, animal or mineral, lead me to it. I'm *hungry*!"

"All right," Tita said. "Just sit here and I'll be back in a short while."

It looked like a squash, only softer. Dick looked at it suspiciously. But Tita only smiled and said, "Go ahead, bite into it."

Dick did and it was the most surprising thing in the world to find out it wasn't a plant he was biting into, but a steak. He liked the first bite. It was all he had out of it. With a suddenness and silence that took them completely by surprise a dozen men leaped out at them from the dank underbrush.

Something struck Dick at the back of the head. There was a flash of blinding light and he knew no more.

DICK opened one eye and closed it almost immediately. The room had swung around an axis that was the most beautiful woman he had ever seen.

She was standing in profile to him and his appreciative glance took in the scarcity of her adornment. He brought his glance back to her face and saw that it too was beautiful. Even though it was pale in anger. He said:

"Honey chile, if you don't mind . . ."

The woman turned and looked him full in the face. Front view she was beautiful too, Dick decided.

"Be still, you," she said.

Dick's mouth hung open at the words. But she had already turned from him and was looking down at something else on the floor. Dick turned his head and saw that it was his friend she was staring at. And it was at him that her anger was directed, was overflowing its bounds.

"So you have come back," she said. And the scorn in her voice brought a chill to Dick.

"Not because of you," Tita answered. "But only because I can't see innocents murdered. This Kola is intent on burning the city to the ground. The city and all in it."

"I have waited a long time," she said. And Dick saw that she hadn't even heard Tita. She was intent only on her emotions. How like a woman, he thought. The damned city could go to ruin. Just as long as she had her say. "A thousand men would have sold their souls for what I wanted to give you . . . for love . . ."

Tita's voice sounded tired, bored:

"Please, Marga. We went through that before. It isn't love you offer. You know it isn't."

The woman drew herself straighter and Dick sighed in pleasure. If only she'd learn to keep her mouth closed and her body straight. But she wanted the floor again. And there wasn't anything they could do about it, both being bound and helpless.

"Yes, for love," she said in finality.

"Is that why you sent that jackal after my life? Him and the others? I suppose he returned here after I was knocked unconscious. That's how you knew where I was?"

"You should know that I am not stupid," she answered. "And this Kalo will find that out also. I have had every move he has made charted down so that I can read it like a map."

"Looks like you got the wrong map, baby," Dick interjected. "Because that Kola guy has got all his marbles . . . and they're all packing the kind of stuff that makes for tough times."

"Who is this blabbering child?" Marga asked.

Tita didn't bother explaining. It would have taken too long. Besides, it didn't make much difference whether she knew or not. The important thing was to prepare for Kola's arrival . . . if that made any difference either. For Tita realized that no matter what preparations Marga had, they were not enough for the other. Kola had too much manpower. And Tita also had the idea that the marshes would not hold him off for too long a time.

He said as much. And for the first time, the look of anger and hauteur on the face of Marga was changed to a more thoughtful look.

"Undo their bonds," she commanded to several men who had been in the background and invisible to Dick.

HE STOOD up and rubbed wrists from which circulation had disappeared. Tita too arose, and did a

startling thing. He walked up to the regal-looking woman and taking her in his arms, implanted a long-enduring kiss on her lips. Dick didn't hear the murmured words:

"This is the first time . . . and it may be the last," Tita said.

The look of violence, so odd in such a beautiful face softened into a more womanly glow. Her eyes grew a little moist and she took a hesitant step forward, only to stop at Dick's strange words.

"Woo can wait. There are more important things on the agenda, I think. For example, the rebuttal of Mr. Kola. And the rescue of the fairhaired Nora."

"Nora?" Marga's eyebrows described perenthesis marks.

"My friend's companion. And a prisoner of Kola," Tita explained.

"Ah," Marga sighed.

Dick detected a note of relief in her tone. But as he had said, there were more important things on his mind.

"May I suggest that we map a strategy?"

"Perhaps you have something on your mind?" Tita asked.

"Uh, huh. And it ain't all hair. Remember that goon who came falling on his face while we were in the grand court of the gypsy baron, mein herr, Kola?"

Tita shook his head in bewilderment. This talk sometimes bewildered him. It made so little sense. But perhaps there would be among the many words a few that did.

"Well, when he spoke of the fact that there was but a single side for Kola to attack on I saw a spark light the master's eyes. That joy-boy knows only one thing. Get in there fustest with the mostest. In other words, since there is only one way to attack, let us assume that they have their biggest defenses there. As a consequence, when

we have broken that line, there will be no other. Right?"

Marga's mouth fell open. It made her look less the goddess and more the human. And a not very smart looking one, at that, in Dick's opinion. He was almost tempted to tell her, for Tita's sake, to keep her chin up and her upper lip down. But that was Tita's worry.

Marga snapped her mouth closed.

"The young one speaks words of wisdom. So I have planned it. Barriers and traps all the way from the plain to the first wall. And there the cream of my army."

"Make Kola fight his way through those traps and barriers. Don't make it too easy for him. Then . . ."

They waited expectantly for Dick to continue.

"Then. . . ?" Tia asked.

"How do I know?" Dick said. "I'm no military expert."

Their disappointment was evident as they looked at Dick, as if they had expected the solution to their troubles to fall from his lips. For the first time he realized how simple were their minds. And the whole thing, the plan for Kola's downfall was laid bare to him. These people were simple. Therefore they would see only the obvious. He explained what that would be. And when he was done Marga kissed him. It almost made him forget Nora. Almost . . .

THE confusion in the camp of Kola had straightened itself into an orderly withdrawal of the main body of troops.

Ramduk, second-in-command, had been entrusted with the movement of the thousands of horsemen which were the main body. The chariots would follow later, when Ramduk had the men drawn up in battle array before the plain leading to the walls of the city. The huge engines of destruction, each

drawn by a span of ten horses, would be the last to arrive. Kola had figured three days before all would be in readiness for the final assault on the barriers and traps which he knew would be in front of the walls.

He stood in front of his tent, Nora at his side and watched the vast horde of horsemen parade before him. Great clouds of dust, stirred by the countless horses made breathing difficult. Yet Nora could not deny the thrill of watching these savages. It made the history of the ancient Persians and Medes tribesmen seem like they had come to live again before her eyes. Kola stood straight and proud, as the men rode past, each leader dipping his spear as he went by.

And when the last had gone, Nora heard an odd wailing sound. Kola read the question in her eyes.

"The women in the compound. Not all will return," he said.

Nora had almost forgotten Dick. The very strangeness of her predicament, the fear she had felt when Kola had invited her into the privacy of his quarters, had all but driven him from her mind. Now she realized that he too was among these. And perhaps in a more dangerous spot. Perhaps he was wounded? Perhaps . . . She put that thought from her.

Kola looked closely at her. He placed an arm almost gently around her shoulders.

"You care very much for that young man?" he asked.

She nodded wordlessly.

"I can see that," he said. "You are not of this world. Here all is death. There is no happiness. All of my life has been spent in the pursuit of a mirage, vengeance. But I cast the die. And I cannot undo what it has shown. There is an end, and I know what it is. They that live by the sword shall die by it.

Only when I do, will there be peace. But that is not getting you to that young man of yours. Only promise me one thing : . . ."

"Anything," Nora said wildly.

"When I have given him back to you, go back to that world of peace you know."

"If we can get that Ato-generator to work," Nora said in a low voice.

"Good. Then let us waste no more time," Kola said. And called to his personal guard to saddle two horses.

RAMDUK looked over the plain leading to the walls of the city of Sama which lay in the near distance, bathed in the full glow of the sun. The huge machinery of Kola's army was drawn up before him, waiting the signal to advance. He could see the traps and barriers Marga had set up. But he knew that they would be of little avail. They could only halt them momentarily. Then the final crashing assault, at which he would lead the men in person, and then the bringing up of the engines to complete the breaking of the walls. And then . . . the end, for the city and all its inhabitants.

It had taken them two days to amass all the men. He knew that there would be no surprise. Syl'a's headless body lay in the dust of the desert behind them. It was the price the leader of the scouts had to pay for letting Tita and Dick escape. But because of that, they had been forced to advance more cautiously.

Now all was in readiness.

Ramduk held the pennant-topped standard out at full length, and let it drop abruptly. Ten thousand voices screamed the battle cries of the various tribes represented, and charged into action. And from the traps and bunkers of stone set in their staggered ranks across the face of the plain, a thousand

men waited the coming of the enemy. They knew they were but a lost cause, a delaying action. But they were prepared to lay down their lives, to the last man, in the hope that those behind would have the time to consolidate their defenses.

The first line of defense had been laid at the beginning of a bottle-neck shape of ground, where the swamp made its first inroad on the plain. And the traps were staggered in depth.

Five troops of horse went charging at the traps, each troop in a column that was ten deep. These were the shock troops, the elite of Kola's men. The men were armed with a long lance and a sword. And each lance was held at the ready to thrust and impale the enemy.

Marga had planned well but Kola had planned better.

When the first rows came within a hundred yards of the first defense trench, they wheeled right, as one, and rode down the edge of the plain along the wall of swamp. The second row wheeled left, and so on until the last row had accomplished the maneuver. The effectiveness of the trench was not merely lost, it was a hindrance. For it had simply been outflanked for the most part. Only a few out of the five hundred men were lost when they turned after leaving the trench behind, and came back to take care of the enemy. But of Marga's men, only a few escaped.

It was then that Ramduk took command.

Behind him, five thousand men waited in serried, unbroken ranks, ready to sweep the enemy from the plain. And as he gave his horse his head, they followed in a wild surge of power. Nothing had ever withstood their mad charge before, and certainly not this time. For each captain had

been told that this was the city which had to be destroyed to the last stone.

BUT the shock troops had discovered that they had not met up with everything they knew. The sand-colored walls of the city bulked large before their eyes, so close had they come, when they ran into a mud-filled muck that mired the horses' legs to their knees. The ground had been prepared in the two days which had been given to Marga. That was the first part of the plan Dick had told her. Every farmer in the country nearby had given his aid. The land had been plowed for a depth of two hundred yards. Water had been drained off the swamp and into the furrowed ground. And now the balance of the men under Ramduk reached the morass.

Then it was, while the whole of Kola's army was in the grip of the mire, that Dick's master plan was put into effect. Liquid fire began to flow down channels cut into the wall. From both edges of the swamp, an oily, evil-smelling, blazing inferno came snaking out, like the giant fingers of two hands ready to tear the heart out of the men who stood in their path. The horsemen were caught between two rivers of flame. There was no retreat. For the plain at this point sloped down toward the city. And a solid sheet of flame obstructed their retreat.

Dick and Tita watched the horror from the edge of the swamp. It was no longer a miasma. They lay on their bellies, peering from the underbrush. A long line of men lay to either side of them, ready at a signal from Tita, to leap out at the enemy. Already, the horrible smell of burning human flesh came to their nostrils. Tita turned.

"In a short while there will be no one left to fight."

And for once Dick found himself at

a loss. The flippancy which characterized him, was gone. Men were dying horribly before his eyes. And he had been the author of the plan which was making them die this way. The draining of the swamp, the cutting of the channels for the liquid fire to flow; they had all been his ideas. Now he was looking at the results. They were not pleasant to see.

"I—," he gulped back a sick feeling and continued, "I think you'd better give the signal to the men. And we'd better be getting back to see what has happened to Nora."

That had been the bargain he had struck with Tita. When Kola's men had been taken care of, Tita was to help Dick get Nora from the clutches of Kola.

Tita gave the signal for his men to charge. And from both edges of the swamp, a thousand men each, came running, to stand in a solid border at the far edge of the fire. There would be no retreat for Kola's men, this day.

Tita and Dick stood up. Behind them a hundred men, those whom Tita had chosen to accompany them, also stood. The herdsmen came forward with their horses. And as Tita leaped into his saddle, he said:

"Let us hope that we are as successful for you."

The "Amen," Dick whispered was a faint sound against that of the galloping horses.

KOLA pulled his horse up sharply. There was a large cloud of dust rolling their way. He had seen many such clouds. They were made by horses, many of them. He wondered what was wrong. The city could not have fallen so soon. Calling to one of his guards he sent him forward to investigate. They had not long to wait for his return. He came back at a gal-

lop.

"They are the enemy, mighty one," he shouted.

"Then let us go to meet them," Kola said. He turned to Nora. "Remember what I said about the sword? I have the feeling that your young man is with them. I think you'd better wait here for him."

Kola and his men were no match for Tita's group. They faced each other across a level stretch of sand. Tita smiled. He had it in mind to challenge Kola to combat. But before he could, Kola called out:

"There is the young woman who is waiting for your friend. I think he had better go to her."

Dick looked back once. He was just in time to see Tita deliver a mighty stroke with his sword. And Kola's head rolled in the dust.

Later, when Tita had taken Dick and Nora back to their space ship, he said, musingly:

"I swear that Kola didn't even attempt a battle. Yet the man was no coward."

Nora knew the answer. But there was another answer she wanted. Dick

opened the space port just then and said:

"Man! was I a dope. I should have looked at the wiring. That's all that was wrong. A loose wire."

Nora turned before stepping inside and looked wistfully back toward the horizon from which Kola had come. She thought of what Kola had told her back there. They had sat up all that night. He had felt the need of talk, as if it served as a confession. She knew why he had started on his conquest. And how empty it had become to him. And she thought of how much chance played in their lives.

* * * *

FLUVIUS X put his thumb against the hard shell of the beetle. Just then his friend, Panto called his attention to a play on the field. And the beetle was forgotten. It had lived a long time, five hundred million years. And it was to live another length of five hundred million years. But if Fluvius X had completed his gesture, Nora and Dick and all the universes that we know would have been instantly crushed. The back of a beetle is not the place for such indestructible things.

THE END

HOW A STAR WORKS



By Milton Matthew



WHEN you get away from the naive idea held by primitives that the Sun—and later, the stars—were supported in their glowing by ordinary combustion, you run into complications, as did the physicists of the nineteenth century. The first one to proffer a theory of action of our sun or any star for that matter was Hermann von Helmholtz. We know now that his idea was pitifully inadequate but at the time it offered scientists something into which to sink their teeth firmly.

Helmholtz's theory was that of a gradually collapsing sun drawing into itself under its own gravitational pull. This tremendous contraction

was supposed to produce ponderous pressures and frictions which generated the vast heat and radiation emitted by that glowing body.

Hertzsprung, Russell and other astrophysicists modified this theory considerably; in fact they were less concerned with the way the energy was produced than in obtaining a life-picture of the star. The life-cycle of the star was effectively pictured. It started out as a red giant, and growing older it contracted, first orange, then whitish purple. All this while it is growing hotter and more dense. Finally it reaches the stage where it begins to radiate at a rapid rate. Thus it cools passing back through orange and then red. This

sequence seems to be the one undergone by all stars.

But it still leaves unanswered the question as to the source of the sun's energy. Of course we know now that it is a matter of atomic decomposition. There are a number of processes which are assumed to be the correct atomic picture. Which of these is right we cannot yet say. But knowledge acquired through the study of atomic nuclei and radioactivity is helping to bring the picture into focus. It appears that stars follow a very definite evolutionary pattern—even as things on earth.

A picture to delight the heart of any lover of fantasy is that of the stars known as "white dwarfs." These incredibly dense packages of interstellar energy are truly beyond belief. Imagine a star which is a hundred thousand times denser than water. A teaspoonful of the companion star to Sirius, a white dwarf, has a density so great that it is estimated that more than a ton of mass would occupy it.

Will some day our star end up as a white dwarf? It is possible but unlikely say the astrophysicists.

* * *

MIND AGAINST MATTER



By Walter Lathrop



IF THERE is any question more difficult to answer than "what is life?", it is "what is mind?" In fact the realms of the exact sciences are by-passed to a certain degree, when discussing this question, because it is so philosophical. The philosophers have a field day on this one.

There is a type or school of philosophy which says that everything is of mind; matter is nothing. The world is made up of mental pictures according to this school—and nothing else. It opens the argument, usually with Descartes' famous scholium, "I think, therefore, I am." It reduces the whole universe to vague shadowy mental images without substance—utterly beyond ken. This school obviously has its limitations even though excellent philosophers have supported it. Today it is without much credence. The whirlpool of physical science has drowned it in a flood of fact.

The other viewpoint, the rigid adherents of the "matter theory" hold that all is matter, that "mind" should be stricken from the record, that even the word is inimical to progress. This group is probably as bad as the other. No matter what we may say or believe it is apparent to the greatest dilettante in the subject, that life is more than matter, that there is a subtle something to which the word "mind" is applicable. Yet the believers in this school talk in terms of nothing but the building blocks of Nature.

There is a balance struck, of course, as might be expected. The dualists, as they are called, believe in the existence of both. The majority of scientists may be placed in this classification, as well as the average person. To any thinking, reasoning being, the knowledge of the existence of both seems hardly the point of any argument.

It seems that as the specimen studied becomes more complex, from the simplest amoeba to the Man, the differentiation between simple matter and mind also grows. Thus amoeba and other single celled animals, while capable of responding

and reacting to certain stimuli, do not in the sense of the word as we usually think of it, possess a "brain." Nevertheless, they possess some faculty that enables them to react to external environmental changes.

As we approach Man this ability of course increases, and so does the portion of the body that is concerned with it. The nervous system and the brain in man are of extraordinary complexity.

The nervous system alone is a challenge to the understanding. It is made up of cells called neurons, the most complicated in the body. Some neurons are sensory ones, designed to pick up and register external events or conditions as light striking the eyes, or heat affecting the endings on the finger. These neurons transmit electrical impulses to still other neurons which in turn pass them to others. In a phrase a whole electrical telephonic system exists in the body. Through the spinal cord a central telephone exchange exists, i.e., the brain, which uses these trunk lines to control the functions of the body. The brain appears to have definite localized volumes assigned to the definite purpose of using certain functions and parts of the body.

The whole problem of consciousness, of awareness, has the psychologists jumping around. One group insists no such thing exists. Everything is a predetermined response to external stimuli—and nothing else. It makes man out to be a logical functioning machine, essentially a robot. Fortunately very few psychologists hold with this view. Man is more than that.

Mind and thought and consciousness are realities. They cannot be sloughed off by dissipating them with a word. They are the core and substance of human existence. In fact if man ever does succeed in creating life, a highly improbable supposition, how will he manage to build anything but an amoeba, not even understanding in the slightest, the meaning and significance of the qualities which we are aware of?

* * *

I DIED TOMORROW

By PETER WORTH

Eddie consented to take the trip into time, knowing that there was much to learn in the future — even to seeing himself die!

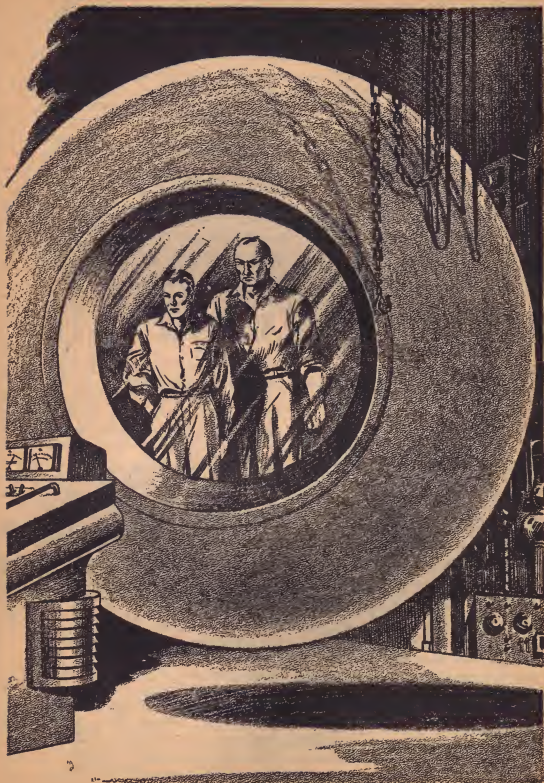
THE foursome in the corner were lifting their voices in some bad harmony. A couple of drunks at my end of the bar had started an argument about the administration, and another couple, this one a young fellow,

an intense-looking sort of guy, and his girl, were also in an argument.

Me, I'm the sort of character that can't keep his nose out of other people's business. And especially when it's a man and woman and they're arguing.

The girl's fingers began to move rapidly over the control panel, and suddenly a buzzing hum filled the interior of the sealed metal globe





So I sort of mosey over to the taps in front of which they're sitting and make with the glasses. I don't even think they were conscious I was around. You know how it is when you're in love. Or maybe you've never been that way. At any rate, the girl's saying, in a low, husky voice:

"... I don't care. I'm not saying that for effect, either. We started out on this deal together and that's the way we're going to end up."

My head's down but I can just picture the kid. She's got reddish hair, almost copper-looking in the dim light, and she wears it long. A small tight face, triangle-shape. Nice complexion, rather full lips and slanty foreign-looking eyes go to make up the rest of her. As for the guy, I said he was intense-looking. Or maybe it was just that he looked worried. At any rate he had his eyes screwed up like he was going to cry or get something off his chest and he knew it was going to hurt like hell to get it out.

"Janice! Ho-ney!" he groans. "Damn it! You know that things have gone too far. I just can't take the risk of letting you go along."

The next thing she says gets my head up like I'd been clipped by one of the beer taps.

"*Newton Aristotle Plato Stuart!* For the last time, am I going along?"

"No," he said in a low voice. Low but firm, firm as that chin of his that had set like cement in the sun. "No!" It was a little louder this time. "No!" He was positive about it.

"Okay, Junior," she says, and flips off the stool. "But let me tell you this. Time waits for no one. And in my case time and you can both go . . ."

SO OUT the door she marches, chin up, back straight and never even turns for a last look. But I was willing

to bet her eyes weren't dry. The young fellow with the long monicker sits there, his head bent at the same angle as when she lets him have it, and doesn't say boo or anything. But I notice he lifts his head when the door slams. I get a fast gander at his stormy eyes. Then the boss hollers:

"Hey Eddie! What's the matter? Sleeping? Get down at this end."

Maybe ten minutes go by. Maybe more. But he's still there when I get back. I reach for his glass and sort of give him that, "Have another," look. He nods, so I pour out another Scotch and splash some soda in a glass and let it stand in front of him. There's a couple of bills in front of him and I start to make change and he says:

"Leave the bottle, fella."

"That'll cost dough," I said.

"How much?"

I looked at the bottle. There was half of a fifth out of it.

"A saw buck," I said.

"Leave it."

Well, I couldn't blame him. A dish like that, and walks out on him. I'd take to drink too. Only not at ten bucks for half a fifth of American Scotch. But like I say, it's his drunk and his dough. I got my own troubles. The two guys settling the country's problems can't get together on them. They're getting kinda loud about it. And just as I reach them, one calls the other something. I lean across the bar and say:

"All right boys. Break it up. It's about time ya scrambled outa here anyway."

They were two guys with a single thought, now. Maybe before, they had different ideas about who they was going to fight, but now they was united against a common foe, the guy who was going to stop them from having fun.

"Says who 'bout which?" one of them

snarls.

The other guy agrees with his friend. "Yeah! What's it to ya, wise guy?"

Well, me, I don't like to see blood, particularly when it's mine. And once in a while I get clipped. Not often, but like I say, once in a while. So I always plays safe—and slug first! I was over the bar faster than they thought possible, I guess, cause they looked at me like I was Superman. They weren't big guys, maybe six feet, maybe a little less. They had their big mouths open and I didn't give them a chance to close them. I put my mitts around each neck and lift with my hands. They come up off the floor and I carry them to the door and give them the heave-to.

THERE'S a couple of, "Atta boy, Eddie," from some of my friends at the bar, but I'm sort of used to it.

I take a gander at the big wall clock and see it's about ten minutes to closing. Most of the boys and girls take the hint. But my friend who'd just lost his love-life is still yockying. In fact he's just reached that stage where the whiskey's beginning to taste good, that is if you can taste it. The bottle's only got maybe another shot in it.

Something about the kid gets my goat. Sitting there beating his brains out like that. But like I say, there's something about the kid that gets me.

"Look, Junior," I says.

He lifts his head but the eyes don't see me. He's blind and I don't mean maybe.

I walk around the bar and help him from the stool.

"Gal—gal left—me," he mumbles.

"Sure, son," I say. "But this ain't a hotel. Gotta go home like a good boy."

"Home? Why?"

"Why does anyone go home?" I snaps. "To go to sleep."

So the punk says, "Yep," and drops his noggin to the bar again.

I've seen too many like that. Usually I just carry them out, put them in a cab and let the driver figure out where they want to go. With this kid, I somehow couldn't. The memory of that girl was still fresh in my mind.

I reach into his side pocket for some identification. All kinds of cards. One of them's got his name on it and an address, out on the south side, a laboratory. That's what the card said, *Research Chemists, Inc., N. A. P. Stuart—Janice Blake*.

My car was out front and I live south, so I figure I'll lug him to this place of his. He must have a key to the joint. And I've yet to see a place of business that doesn't have a table at least where a guy can be stretched out on.

IT'S on one of those dead-end streets west of the I. C. Just as I turned the corner I thought I saw a light blink out in what proved to be his joint. But when we got there, the place was dark. I go back to his pockets again. There's a key chain in one of them. The third key I try's the one. The door opens and I lift Junior up and carry him in. I find the light switch and the fluorescent comes on.

There's a cot shoved up along one of the walls, so I heave him onto it. And just then he picks the time to come out of it. I'm bent over, my hands around him, and suddenly a pair of hands get me smack in the throat. It's an old Judo trick. I stagger back and get kicked, but hard, right in the shin bone. I howl in pain and before I can move, I get a kick in the other shin. That was the kid's mistake. He should have let well enough alone. But no, he's like the rest. Got to play hero. He's half-sitting up, his paws stretched out like

he wants to fight. So I steps in and lets him have it. Not hard, I'd a killed him if I hit him hard. Just enough to put him away. And a clawing, screeching wildcat gets in my hair from behind.

"You brute, devil—Oh!" she yells. And those nice little hands of hers are trying to put my eyes out, tear my hair out, rip my clothes from my body.

Well, jack. I can't help it. But I sort of handles her without kid gloves, if you know what I mean. And believe me, when I'm through, I'm breathing plenty heavy. She has a nice body. Another time and I'd of, well, you know how that is.

I'd put her down alongside of her boy friend. She's sitting there killing me with her eyes. I shake my head and say:

"What the hell was the idea of that?"

"You—You—" she's still sore. These dames. A couple of hours ago she gives Junior the air. Now she's hot because I had put a light slug on him.

"And how did you get in here?" I ask.

Her eyes get kind of round and suddenly she's smiling.

"Why, you're the bartender, aren't you? Now I know. Nap passed out and you brought him here. I'm sorry," she says. And I see she means it.

Well, she's got the kind of smile that makes a man holler uncle, and nobody says I'm not a man. At least no woman's ever said that.

"Yeah, miss," I says, giving her a grin. "I'm the bartender. Junior passed out and I sneaked out one of his cards and since I live south I thought I'd take him here." I look at the lad, still out cold and see that he's just starting to come out of it.

The two of us watch him for the second or two it takes. He shakes his head, sees the girl and does a double-take. Then he sees me and does an-

other.

"Surprise, dear," the girl says.

"There's nothing funny in this," he says, still shaking his head.

"I'm sorry I had to put the slug on you," I say. "But hell, man. You shouldn't kick a guy. Not while he's standing, anyway."

"I guess you're right," he says. "Of course I acted from instinct. Now I recognize you. And that brings me to you, you *dear child!*"

The girl buries her head in her shoulders and plays like she's scared to death. She kidding, but he's serious. He's forgotten me.

"You can stop acting like that," he says. "What I told you before still holds good. Why did you come back here?"

IT SEEMED to me like I'd heard this before, so I start to hit for the door. I slow down when I hear the gal say:

"I made my mind up while I was driving out here that I won't let you go alone."

"Oh . . ." he wails. "Damn it, Janice! Can't you see . . . Don't you understand? One of us must stay here to take care of any exigencies."

All of a sudden I hear someone say: "Something wrong maybe I can help with?" And realize it's me who had said that.

They don't say anything for a couple of seconds, just look at me. Then they look at one another and I can see that my suggestion has got some merits as far as they're concerned.

"What do you think, Janice?" the boy friend asks.

"Could be," she says. He's big . . . and strong! But can we trust him?"

"Trust me! Why . . ." I suddenly realize what I'd maybe let myself in for. Or rather what *had* I let myself in for? They saw the odd look on my pan.

"Uh, uh," Junior says. "Can't ask just anyone. Why we'd never even thought of letting in any of our friends. Why should we ask him?"

"Wait a minute!" I said. "I don't know what this is all about but as far as trusting me, why the boss never even checks the damper. That's saying a hell of a lot. The way that guy watches the nickels, you'd think he was the treasury checking incomes."

"I don't think it's a question of trust," the girl says. "I think it's a question of courage. After all, the unknown . . ."

"Are you calling me a coward, baby?"

"Well . . . Look, mister . . ."

"Eddie."

". . . Eddie. Nap and I have stumbled onto something that has to do with time. I don't think it'll do any good trying to explain because it would take a highly trained mind to get what we've found. What concerns us is that we've reached a stage in our experiment where we've got to put our machine in action."

"Machine?"

"A time machine. A machine which will enable us to go forward and backward in time. Simply, it's a new method of applying the cosmo rays. At any rate we've managed to isolate certain units and put them to use. Harnessing time, as it were."

"You don't say," I say.

"I do," she answers. "So what do you say?"

"Do I get back in time to go to work, tomorrow?"

"You'll be back in an hour, if everything goes right," junior says.

"Let's go, then."

They got this contraption in the back room. It's a big metal ball. So help me, that's what it is. But big! The three of us get into it and my eyes pop

at all the gadgets inside. There's a gadget that's a glass ball; inside is water. At least it looked like it to me. Junior sees me looking at the glass ball and says:

"That is the regulator, the cosmo rays pass through the filter and into the level. Up, we go forward. Down, we go back. One of your duties will be to watch the regulator. See that lever?"

Did he think I was blind? Of course I saw it.

"It operates like the old-time joy stick on an airplane. Push it down and the gas goes up. Up and it goes down. That's all you have to know. I'm going to be busy at the wheel."

THE ball is made of a chrome steel. They had cut out a section in the front, so that a glass could be put in. There were a couple of bucket seats set close to each other, both facing the glass. Junior sits himself in one and motions for me to sit in the other. I do and notice that there's an instrument board in front of us. There are more dials and gauges on it than on an airplane.

I look through the glass and see that there's another panel board in front of us, this one on the outside of the ball.

"That's where I'll be," the girl says. "It will be up to me to see to it that both of you are always within range of the life flow."

"Life flow?" I ask.

"Yes, Junior says, pointing to a couple of little gadgets hanging from a hook on the panel. "Without this gauge, Janice won't be able to tell how much life force we need. Another of the powers of the cosmo rays. They give us life. We won't be able to see them by any visual means. But Janice can trace them through her panel and project them to us."

There are two things I know, bar

tending and muscle stuff. This cosmo business and life force they were talking about was so much wash to me. But so long as they knew what they were talking about that's all I wanted to know, and I said as much.

They were no longer grinning. I liked them better the other way.

"Maybe . . ." the girl said hesitantly.

Like I could read her mind, I knew what she meant.

"Oh. Don't worry about me," I said. "Just so long as you know what you're talking about. So let's not waste any more time talking. Action, that's what we need."

I didn't realize until after we'd started that maybe she wasn't thinking about me at all. It was Junior that was on her mind. She sighed at my words and started for the door. Junior was sitting, waiting for her to leave and had his face turned to her. Suddenly she turns and runs back to him and plants a kiss smack on his lips. And before I could stop her, as if I wanted to, she brushes her lips to mine.

Only my ears heard the whisper, "Watch over him will you?"

I nod yes, and she scrams, leaving us alone.

"Strap yourself in," Junior says. "There might be a jolt."

I tighten the strap, wondering *where* we're going. I thought this contraption didn't go anywhere. Looks like I was wrong. I look straight ahead and see that the girl is sitting at the panel out front. She sees us and smiles. It wasn't exactly the bravest smile I'd ever seen, but she was trying. Then I was busy watching Junior at the controls.

There's a metal bar he presses in and a humming sound comes to us, a sound that gets louder and louder until the whole ball's humming. I see his lips whiten and his hand sort of quivers as

it sets on another bar. Then his lips straighten out into a thin white line and the bar goes all the way in.

The humming gets louder yet and something grabs hold of my stomach and squeezes it until I groan with pain. I keep looking at Junior but I don't see him so good. I don't see anything good, in fact because the whole thing's spinning like it's drunk. I start laughing, I know that, then I don't feel or see anything any more.

"Eddie." There's somebody calling me. "Eddie!"

I shake my head and the fog goes away. And I know where I'm at. In that big steel ball . . .

"Holy sacred snakes!" I yell.

We weren't in anything. We were just floating through space. Just the two of us. Yet I knew we were still in something because I could still feel we were sitting on those bucket seats. And Junior's head was bent as if he was looking at the instrument panel.

"It works," the kid says softly. "It works. Now to see where we are."

FOR a second I thought my eyes were going back on me. All of a sudden the board had come out of nowhere and was sticking out there in front of us. The kid was smiling. I had to admit I couldn't see anything funny in it. I also had to admit that the kid was brave.

Like I say, the panel is with us again. But that's all. It seems enough. The kid's got his eyes fixed on the thing.

My eyes go into focus and I see some things that had escaped me before. There's a little dial that's marked off in the millions. And another that's an altimeter, I was sure. The kid mumbled to himself:

"Eight thousand years and eight thousand feet. Not bad. The shell's gone but we expected that. Now let's

see . . . H'm. I think I'll set it to zero . . . No! I'll make it two million."

He diddles with a gadget. Nothing happens that I can see. The sky in front of me looks the same and there's no movement of our seat. We just sit there and look smart.

"Well," the kid says, turning to me, "how do you like being in the past? Two million years ago in the past?"

I look at him like he was nuts.

"Say! What's got into you? Are you nuts or something? Two million years ago! Why we're right on . . ."

I swallow hard. I'd taken a gander at what was below us and if I hadn't been strapped in, I'd of fallen right out of the seat. We must have been moving because below us about a thousand feet or so there's the biggest city I'd ever seen. And it wasn't Chicago.

Junior had followed my glance and he whistled shrilly when he saw it. His eyes grew big and round. His hands moved faster than I could see. And suddenly the city was no longer there. We were in a sort of valley. High hills hemmed us in on either side. They were so low I felt like reaching down and pulling off a couple of leaves.

"Whew," Junior said in a relieved tone. "I didn't want anyone to see us until I was ready for them. Now let me see . . ."

I put a hand on his shoulder.

"Look kid," I said. "Don't think me nosy, but what happened?"

He took a quick gander behind us at the glass ball and sighed in relief again when he saw that the level was where it should be. Then he answered my question:

"I'm not quite sure," he said. "Either we went forward in time, and from the level's appearance we didn't, or I just didn't imagine that . . . Oh hell! What's the sense in kidding ourselves? I'm all at sea."

The oddity of something struck me then. I'd turned and seen the level. But I hadn't before. I turned again and saw that the rest of the ball had materialized. We were all together again. How nice. And Junior couldn't explain it.

My hand wasn't so gentle at his shoulder, this time.

"Listen son," I said. "Let's get something straight right now. When I ask for an answer, I'll want one. Not that wash you just gave me. So think fast, what's this all about?"

He pushed my hand away and I was surprised at his strength.

"Look Eddie," he said wearily. "Maybe we made a mistake taking you. But from here on in, I'm the boss, get that?"

"Yeah," I said. "So tell me, boss, what's with us?"

"All right," he said in that same tired tone. "I'll start from the beginning. Janie and I decided to try the past first. That's all there is to it. We're here and it's not quite what I thought it'd be."

"And just what did you expect to find?" I asked, thinking that maybe I might get an answer that would make sense.

"According to all scientific information, this planet shouldn't have had cities like the one we saw, sprouting around. That's for sure."

So he could make sense. There weren't supposed to be any cities around. So okay. What did that have to do with us?

His eyes crinkled at the corners and a big grin creased his nice mouth.

"You're right, by George," he said. "What difference does it make? We've come here to investigate what we were going to see. So I say let's start."

HE FIDDLLED with the controls and the big ball settled down to earth.

I didn't even feel us hit. He unstrapped himself and while I'm undoing mine, he gets something out of one of the cabinets and hands me the thing. It's something that looks like a gun, yet doesn't if you get what I mean. Altogether, it looked like one of those water pistols the kids play with.

"Be careful with that, Eddie," he says. "There's dynamite in that tube. Don't use it unless you have to. And one thing more, before we start. The life force gauge; wear it like another watch. And don't let anything happen to it."

I shrugged my shoulders and follow him out of the ball.

The weather was nice in the year two million; at least it was on that day. Junior starts out with me right behind. It'd been a long time since I'd climbed hills and I was puffing when we got to the crest of the one we were on.

Junior plays Indian and crawls around the brush on top like he was afraid of an ambush. I did the same, feeling as foolish as if a midget had slugged me and knocked me out. We peer through some bushes and find that we're looking out across a long shallow valley.

The city we'd seen was at the far end of the valley.

"So I wasn't imagining things," Junior says. "It's there all right. Well, Eddie. What do you say, shall we pay it a visit?"

For an answer I start sliding down the slope of the hill. He fiddles with something attached to his wrist, then follows me. I wasn't exactly attired for hill sliding and my clothes were a little shot before we reached bottom.

But that's only the first hill, although the highest. There's two more to go. Eventually we get over the last and wind up on the nicest bit of paved highway I'd ever seen. And the emptiest.

There ain't a soul to be seen. I wondered what they'd built it for, if they weren't going to use it.

"Think we ought to walk on the road?" Junior asks.

"Yeah," I says. "If trouble comes, son, meet it head first. And meet it swinging."

We're walking along, minding our business, sort of looking the countryside over, when, *whoosh!* Something goes by so fast it was like streaked lightning. We stop and look at each other and the same thought was in our minds, was that trouble that just passed? It was.

"Halt!" a voice shouts.

My mother didn't raise her boy to be a dope. He just grew up that way.

"Come on," I yell, and start tailing it in high, down the road.

I turn after about ten yards and see that Junior is still standing there. What's more, he ain't alone. From out of nowhere, it seems, about twenty men came and were making a bee-line for him.

I didn't hesitate. We all got there about the same time. It was a good try, but twenty to one odds are no good to play against. I felt like a trussed hog going to market. But the two guys lugging me would be sure to remember me, I knew. There were two others who weren't coming with us. Broken necks don't make for comfortable traveling.

It was small comfort to know that. Here we were two million years in the past . . .

Wham! I hit the ground hard enough to knock the breath from my body. Those jerks just dropped me when they got to the place where they were heading for. I saw now what had *whooshed* when it went by. It was a long, cigar-shaped affair that was open at the top. Junior and I were dropped inside the

car and some of them crawled in with us. The rest went to another one that was along the shoulder of the road and got into it. I twisted my head and saw one of our boys monkey with a gadget and *whoosh*, we were off. Then, I took a close gander at our friends.

THEY weren't a bad looking bunch.

Most of them were dark-haired, the others blond. They all looked alike just as most men look alike and with the same differences that go to make up people. One guy had had his nose broken at some time or another, another had bushy eyebrows and a third wore a sneer like it had been born on him.

Sooner than I thought, the cigar box slowed down. Junior and I had been thrown against an upholstered seat that faced forward. The road looked like one of our highways on a Sunday afternoon during summer.

I kept my eyes peeled and noticed everything. There was plenty to see. Because we were now in the city limits. There were no suburbs in this place. Open road, then middle of town.

Junior must have been nuts. If this was two million years ago, we'd been living the wrong way. Man, they could have shown the city fathers a thing or two about planning. It was a city of skyscrapers. Leveled traffic and all that. And not a soul on the street.

The cigar stops in front of one of the sky-high buildings and we pile out, Junior and I on the shoulders of some of the huskies. Then into an automatic elevator. *Zoom*, and the thing stops, door opens and out we go into an office. That's right. From elevator to office, direct. There's a couple of guys sitting around who remind me of a hood's hangout, except they're dressed different and don't carry heaters. With their backs turned all these guys would look

alike. They wear some sort of skin-tight pants and a form-fit jacket that makes them look like something out of the comic books.

The lugs inside give us the short look, but nobody says anything. There's a guy with bushy eyebrows that's the lead man in our outfit and he barges right in the inner office without even knocking. It's a nice place, modern as a Hollywood set. Makes me think of the lobby of a theatre back in Chicago. They pile the two of us in a chair and line up along the wall like at a police lineup.

Pretty quick an inside door opens and two guys come in.

One guy's fat and short and bald and greasy-looking. The other guy's tall and slim and handsome with that kind of baby face a guy likes to push around. But mean, you could see it in the way he licks his lips when he sees us.

The little guy's a fussy character.

"Who are these . . . What is the idea . . . Come now, Jerry. What is this?"

English is spoken here.

"Spies, sir," Jerry says. He's the lad with the John L. eyebrows.

"Spies! Ridiculous! Because a man dresses in outlandish garb, and doesn't look like he's one of us, you assume he's a spy. Ridiculous! Of course, you may be right. Come here, my good man."

The fat stuff was looking at me. I grin and shrug.

He says, "Oh," like it was the first time he'd seen the ropes. Then he says, "Well, Jerry. Remove his bonds."

Jerry reaches under his shirt like he was going to scratch himself and comes out with a sticker. Like they say in the kid's books I was free in a jiffy.

"Spies," the fat boy says again. "Tell me, my good man, are you a spy?"

I grin and say, "No."

"Do you hear that, Farbish? The man says no. Nice chap, don't you think, Farbish?"

ALL of a sudden it dawns on me that I'm being ribbed. That heats me up.

"Look, fat man," I say and if he'd been listening, he'd of heard that something in my voice. "Are you being smart or something?"

"Now, no spy would talk like that, would he, Farbish? I don't think so. What *do* you think, Farbish?"

"I think we've been fooling around long enough," the tall, lean guy says. "Sometimes your humor fetches me, Choppy."

"Fetches me too," I say and take a dive for the fat guy.

Well we had fun for a while. I get in a couple of fast ones to the fat boy and a couple of more to the other guy before the boys inside *and* the boys outside break it up.

There's two guys holding my arms and a couple of more on my legs and I'm looking up giving the fat one and lean one a big grin. The fat guy snuffles some blood out of his nose and grins back. But the tall guy don't think it's funny. He's got a rag out and is wiping his shnozz with it. There's blood on his mouth and a big cut on his forehead. Three of the boys are out cold.

"A remarkable person, Farbish," the fat guy says. "A truly remarkable person."

He walks over to where I'm laying and looks down at me for a second. The grin's still big on my mouth. He hadn't moved so fast when I came in. All of a sudden his foot's back, then it's out, right in my kisser. My head rolls with the kick and he lets go with another. This one takes me at the side of the jaw and I go numb there. I stop rolling and he keeps kicking. I don't

know how long that'd kept on. But sometime later, I hear the other guy say, "Take it easy, Choppy. You'll only kill him."

There's only one place I can still grin. Inside. Because the outside's all numb.

He backs away and stares at me, his breath whistling from his wide nose. He grunts once or twice, snuffles his nose clear and turns away and walks to the desk. This other guy follows him. They talk in low tones but I can hear them.

"Well, Choppy," the big guy says. "What have you decided?"

"What am I supposed to decide? The evidence is before your nose, Farbish. Jerry thinks they're spies. Isn't that enough?"

"But from where?"

"An excellent question. I think I'll ask the other one. He looks more intelligent and co-operative."

I'd forgotten about Junior in all the excitement. They walk up to him, still sitting in the same place and looking like the battle hadn't phased him at all. In fact he's whistling to himself. They just give him the copper's stare for a second or so.

And he just goes right on whistling.

"Ah!" he says in satisfaction. "A whistler's courage. Our young friend is not afraid, Farbish. Well, fear is a muchly overrated commodity, insofar as I'm concerned. However, he has the look of mind over matter, so I think he *will* co-operate."

This guy, Farbish, is one of those silent Joes. He just nods and says nothing.

JUNIOR stops his whistling and gives heavy a slow stare. Then he opens his gab and starts talking:

"I have no desire to hold anything back," he says. "But before I relate who and what we are, there are several

points I'd like to have cleared up. Mind?"

"Why no," heavy says. "Go right ahead, young man, ask."

"First. Where are we?"

"In the heart of the greatest metropolis in the world, Chicago."

"H'm. And, this might sound silly, but what is the year?"

"It isn't any sillier than your first question and that got an answer," Fatty says. "The year is four thousand and ten."

Junior's lip curls in disgust. His head goes up and down a couple of times. I get it. The time machine. That was the only thing on *his* mind. The fact that we were in a hole didn't seem to bother him.

"Thank you," Junior says, polite as all get out. "Now as to who we are and what we are doing here. My name is Stuart and my friend's name is Eddie. We too are from Chicago. But a Chicago of more than two thousand years ago. I know it sounds unbelievable," he continued on seeing the look of disbelief on Farbish's face. "But it's true, nevertheless."

Fatty snuffles again and his meaty eyelids draw together. I can see that Junior's story don't take too well. Fatty chews on his lips for a couple of seconds, then says:

"Incredible, if true. And for some reason or other, I'm inclined to believe you. Although, as you can see, Farbish doesn't. But I do. And that my friends is of greater importance. I'm not concerned with anything or any reason for your voyage through time. It has been done before, I believe. And with as little satisfaction as you've found. What concerns me, is the use I can put you to."

"What do you mean?" Junior asks.

"Ah!" the tall guy suddenly breaks in. "What are you fooling with these guys for? Let's get rid of them."

"Haste, Farbish. Your failing, as I've pointed out. Always in a hurry to get something done. It's simply no good to get into that frame of mind. The logical approach, Farbish. That always does it. Now about these two. They are distinguished visitors. Yes they are, Farbish. And don't look like you think I've lost my mind. The world of science was abolished more than five hundred years ago . . ."

"Wait a minute, Choppy," Farbish says. "How do you know that they're what the other guy says?"

"Because of something Jerry brought in with him," Choppy was patient. "See those odd looking things."

He points to the water pistols. I'd completely forgotten them.

"They are primitive atom guns. I've seen similar models in the old museum that used to stand by the lake. But since the days of their use have been dead for an awful long time . . . and that's something any child can tell you . . . ergo, they are what they claim to be. Does that make sense, Farbish?"

I WAS beginning to wonder who this Farbish was. Some kind of a stooge, I guess, from the way Fatty was treating him. And I remembered something all of a sudden. Junior had tried to use his rod during the fight on the road. It hadn't worked!

Farbish shrugs his shoulders and clamps his kisser together.

Fatty goes on, "It makes sense because, since even a child knows that an atom gun is of no avail, these two are not of this world. In time, that is."

"What do you mean?" Junior asks.

"Atomic war was abolished a thousand years ago, my boy. And the use of atomic weapons with it. What's more, they were able to enforce their decree. I'll explain," he goes on. "Our scientists of that bygone day found out that

the atom's use can be circumvented by means of certain rays from space, cosmic or whatever was the name for those rays. The entire planet was ringed by these rays and no amount of atomic energy used was able to penetrate them. These guns you used were useless to you. Had you been of this world, you would have known that. But why repeat what is palpable?"

"Okay," Junior says. "So you believe us. Now what?"

"Can you control your friend?" Fatty asks.

"I think so."

"Then I will release both of you."

"Yeah," I stick my two cents in. "I'll be good."

"Excellent," Fatty says. "And since you're here, I may have something for you."

The four guys holding me down get up and I can hear their sighs of relief. This Jerry takes the ropes from Junior and everything is just sugar with us.

Fatty goes back to his desk and sits down. Farbish takes up a spot right behind the chair. Junior rubs his wrists, nods for me to come along and sits on the edge of the desk. I stand there, teetering back and forth. The blood's started to dry on my mouth and nose. But the ribs are still sore. Fatty don't know it but I ain't forgotten the boots he's given me.

"Now then," Fatty says when we're comfortable. He's the gabbiest guy. "I want to show you two something." He opens a drawer and pulls out a map. So help me, it's a map. "Look," he says. "This is a map of the States. See here, Chicago. There's Pitts. And down in the lower section is Omaha. These three sections are the heart of the States. Nothing else matters. And the one who controls these sections, controls the States.

"It is my purpose to gain control."

I look at the guy like he's nuts. But Junior's got a thoughtful look in his eyes. Me, I don't have to think. The boys are with us even in the year, four thousand.

"What happened to New York?" Junior asks.

"What happened . . . Oh. Of course you couldn't know. Between nature and man, there have been some changes made."

Say, I thought, that had been a tune title back in the late thirties.

"For example," Fatso went on, "this city has been rebuilt several times in the past three centuries. A thousand years ago, a vast tidal wave, caused by the indiscriminate use of atom bombs, wiped out almost all of our west coast cities." The fat shoulders shrugged their indifference. "But that is in the past. The present is what matters."

Junior nods his head.

"Oh," Fatty says, lifting a finger, like he remembered something. "By the way. You must have used some vehicle?"

"Vehicle?" Junior looks at me and I give him the Indian stare.

"Well, you didn't *will* yourself into this century."

"Oh! I see what you mean. No, we didn't will ourselves into this situation. But we were able to send our physical selves here."

Fatty mulled that one over. But Junior didn't give him much time for thinking. Junior was right on the ball.

"Tell me," he says. "What happened to all the people?"

"You are observant, aren't you?"

"That's my boy," I says. "He's the lad who can find the needle in the haystack."

FATTY looked at me. I didn't exactly get scared, but I got a tight feeling in my throat.

"It isn't the mystery you assume it to be," Fatty said. "Because of . . ."

"Boss! Boss!"

The door had burst open and one of the tight-pants boys barged in. His eyes were popping from his head and all he could do was holler, "Boss!"

This guy Farbish was lightning. I didn't even see him move. But all of a sudden he was at the scared guy's side and was shaking him.

"What happened?" he says, not loud, but the words carry all over the room.

"The Ripples gang!"

"Break out the arsenal!" Fatty grunts. "Quick. And cut the power to the elevators."

Fatty reaches in another drawer after putting the map he was showing us, in an inside pocket of his tight jacket, and pulls out a . . . rod! That broke me down. Of all the things to bring up after talking about atom bombs. It looked like a GI issue, a .45 automatic.

In the meantime the boys are scooting out of the office. Fatty and his pal stand around like they're waiting for something. It ain't long in coming. Jerry and two more of the boys come back and they've got a couple of carbines strung across their backs. Fatty and the other guy buckle their heaters on and make with their heads for us to follow. I notice Jerry's got a couple of pistols in his hand. As we go through the door, he hands each of us a gun.

The whole mob's waiting in the outside hall. There's an elevator open and about twenty of us crowd in. The door slams shut and we go up. Next thing I know the roof's our getting off spot.

I realize then, just how big the building is. There's a stone barrier all around that's about ten feet high. But it's at least a block from where we are, almost in the center of the building. The boys got their heaters low, like they're ready

for action. And it ain't long in coming.

All of a sudden there's a couple of explosions. I don't have to have any one tell me what they mean. I've heard gun fire before. Plenty. One of the boys standing beside me, sighs and sinks to his knees. I take a fast look and I see that he don't need help. Not unless I want to give him a new head.

There's a smile on my kisser when I turn around. But it don't stay long. I'm all alone. The rest are hot footing it toward that stone wall. It's a funny thing, but I don't see where the shots are coming from while the shooting's going on. But the minute I start running to where the rest are going, I spot the ambush.

The bank of elevators we'd used were only one of several. There's another series that comes to the roof. Over about fifty yards, there's another square shack where the elevators are housed. And I see about ten guys laying low behind corners while I run. I pass a couple of our boys on the ground, covering our retreat. The rest are by the wall. Then they're over and I join them.

I SHINNY across it before I think.

By all rights there should have been a space about ten inches wide, as a coping. Instead, it's about three feet from wall to building line. I almost land on Farbish. I scramble to my knees and peer over the edge like the rest are doing. Most of the boys are letting those short-barreled carbines talk. They don't make much sound, just a high, *spang*, when they go off. But I see chips fly from the concrete block house behind which the other gang's laying.

"A nice mess," someone says, at my shoulder.

I look around and it's Junior talking.

"So?"

"Nothing," he says. His eyes are

narrowed and I can see he's thinking heavy. They don't even blink when chips fly off the concrete right in his face. I don't even think he knows that there's shooting going on.

I'm still carrying the heater in my hand. But it don't do me no good. They're about fifty yards off. Too far to make a shot count. So I look around at the rest. Fat stuff's laying right across the ledge, his fat bottom sticking out, and the carbine snuggled up to his cheek. There ain't any kick to it because I can see him pull the trigger a couple of times. I wonder where Farbish is. I don't see him. And all of a sudden he pops up, right at our feet, almost. He comes *up* from below the outside of the building. And right after him, Jerry. They crawl up to Fatty and say something to him. The big guy turns his head and nods. Then he bends low and starts toward us.

"I think it's best to retreat," he says when he gets to us. "My friends of the ambush have left us an avenue by which we can escape."

Well, I don't feel like hanging around. So when they start going over the side of the building I ain't far behind. The mystery is solved by a fire escape. But who'd a thought of that in this age? I see the first man disappear into a window about three flights down. It proves to be the window to another office, a good deal like the one Fatty has. The first guy was Farbish. We wait there until the last guy gets in. Then with Jerry and another in the lead, we start out.

Junior's right by my side. And all of a sudden I like the kid. I hadn't thought one way or the other about him. He's just around, as far as I'm concerned, and that's about all I can say. Now, I take a good look at him and I see he's as cool as a cucumber. All this don't bother him. I pat his

shoulder, and when he recovers, he looks up at me and grins.

"All right, gentlemen," Fatty says from the door. "Shall we move along now?"

"Sure," I say. "Let's get cuttin'."

Four guys are flanking the outside door. The corridor's empty. But it's easy to see that they don't like the looks of it. About ten feet to the right there's a stairway. One at a time, we head for it. And once more, Fatty's the last guy to hit it. There's a kind of respect dawning for this character. Any guy what thinks of his men first, well, I guess I couldn't blame him for slugging me, the way I'd cracked to him.

These guys know their business. First one guy'd run down to the next landing. There'd be another guy half way up the stairs. The first guy'd signal and make a break for the next landing. And the second guy would skip down and wait for another signal. We must have been strung down for eight or ten stories when the shooting starts again.

I PERK up an ear. Small arms fire! They were close to each other. I'm about third from the last, Junior's the man ahead of me. As usual Fatty's the last guy. Before I could get my mind made up what it's all about, Fatty's shooting past me on the run. The little guy sure can make feet when he has to. And all of a sudden I'm last man. I take those steps four at a time.

There's four guys laying at the bottom of the last step. Something jerks at my sleeve. I look down and see a hole there. And all of a sudden something clouts me between the shoulders and I fly down the rest of the steps and skid in the blood and sprawl over one of the bodies.

There's a string of offices all the way across the opposite wall. Some of the doors are open, some closed. The ones

that are closed have the glass shot away from them. And from somewhere behind each of those doors, there's guns booming.

The rod in my hand jerks a couple of times as I let go with some fast trigger work when I spot a couple of heads. Somebody's shouting near me. The words come dimly to me.

"Keep going down. Keep going down. The basement!"

I spot our boys moving off, one at a time again. Now there's shooting from above us. I make a quick turn and let loose three shots at some guys in red pants and shirts. Two of them roll down the stairs, the third guy taking it on the lam up the stairs again. Then Junior's tugging at my arm and hollering:

"Come on, Eddie!"

I start to my feet . . . and fall flat on the back of my head. The blood on the floor. Well, that's all I remember.

"Get up!" somebody's saying. I open my eyes.

I shake my head and climb up straight. I was getting a little tired of all this. Then I look around and I see that I'm not with Junior any more. In fact I don't see any of the rest. There's a roomful of mean-looking guys, all of them giving me the eye as if they'd like nothing better than to beat the head off my shoulders.

A couple of them help me stand. They're not too gentle. So I heave with my shoulders and they fly across the room. This time they don't play. There's a big guy, and when I say big, I mean by my own measurements, and I stand four inches above six feet. He's got a rod pointed straight at my stomach and when the lugs who had my arms go spinning, he says:

"Don't be a fool! Now stand still and talk."

"I talk better when I move around,"

I say.

The gun goes off and something tugs at the lobe of my ear. I put my hand up there and it comes away, wet.

"Keep acting unreasonable," the big guy says, "and I'll lower my aim."

"I'll be good," I say. It cost me something to say that. But better to be nice than be shot to pieces.

"Lugger," the big guy calls to somebody.

"Yeah boss," a short stocky guy, with blond hair, says. He's standing over by one of the windows, looking down at something on the street. He doesn't move from the window.

"How's it going down there?" the big guy asks.

"It ain't," Lugger says. "Looks like they all got away."

"Well, Martha's down there. She knows what to do."

"I don't trust that . . ."

"Shut up!" the big guy says in a quiet tone.

"That dame's gonna get us into a spot one of these days."

"I told you to shut up!"

"Okay, boss," Lugger says. He doesn't raise his voice or change it in any way. It's just a monotone. Blah! I listen good just in case these guys are fighting among themselves.

The big guy turns to me again.

"Who are you? Where did you come from? How did you get . . .?"

Lugger breaks in. "Don't ask too many questions, boss. He was carrying a gun and he knocked off two of our boys. That ought to be enough. What's the use of a lot of questions?"

"Did any one ever tell you you were smart, Lugger?" the big guy asks.

Lugger didn't even bother turning his head.

"Well, you're not. So don't tell me how to run things, see?"

It dawns on me that the big guy's

afraid of this Lugger. All the gab is just to cover up.

LUGGER turns and walks away from the window. He moves slow and easy. There isn't a single unsure move about the guy. He comes up until he's standing right under the big guy's nose.

"Listen," he says in a quiet tone. "I see as much as you. I don't care where he comes from, even if it's from across seas. I don't think that he does. But no matter where he comes from, it hasn't got anything to do with our plans. So I say let's knock him off and get it over with."

I never made Information Please, and nobody ever accused me of having too much between the ears, but it didn't take a great mind to get what this Lugger's driving at. He only knows I'm in the way. I can't blame him. In their spot, I'd do the same. But the big guy has got other ideas.

"No! There's only one of him. Maybe we don't have too much time for him now, but we will later. He'll go with us. You two," he tells off a couple of his goons. "Watch this man. And if he makes a break, let him have it."

The door pops open and three more of the red shirts pile in. It takes me a minute to see that one of them is a woman. She's dressed like the others so I don't notice it's a woman until she walks up to the big guy and she's got her back to me. Then I notice the long hair. But she's got a gun strapped to her belt like the rest of them. And from her walk and the way she carries herself, she's one of the boys. Then she spots me.

"So," she says walking slowly toward me. "Another one of them."

She's got the meanest eyes I've ever seen in a human face. Her lips are drawn tight across her mouth; they

look like a pale knife slit, and her eyebrows, heavy as mine, are drawn together.

"So," she says again. She must like the word. All of a sudden she's on top of me and her fist drives right into my nose.

Nobody slugs me without me getting back. And that takes in the weaker sex. She goes spinning across the room when I let her have it. Not a punch. I'd of killed her. But I give her the back of my hand. A pin could have been heard, even on that pile carpet, when I hit her. Then Lugger laughs.

And the gal forgets about me. She's on him like a wildcat, clawing and screeching like mad. He takes her hands in mid-air like DiMaggio on a fly ball, and bends them behind her back.

"You're lucky he didn't hit you harder," he says, and bends her a little further back.

She's grunting from the strain and I see the sweat break out on her face. And all the while the rest of them are watching, their eyes popping in enjoyment of what's going on. Then the big guy speaks up and Lugger lets her go.

"Lugger's right," he says. "Now get over here and behave yourself."

She moves to the window, looks out for a second, then turns sharply and says:

"So they got away, Ripples. Now what? Are we going to stand around and hold hands? Make up your mind, man. Choppy can get a hundred men by the time you get moving."

"That's what I'm hoping," the big guy says.

"Are you crazy?" she asks.

"No. That will make the whole thing easier. While all you people have been jabbering away, I've been doing things. There are a hundred men around his place in Evanston, right now. He's

riding into a trap, that's what he's doing."

"Not bad," she says, her mouth twisted like she's got something good to chew on. "Not bad at all. What do you say to that, Luggier?"

Luggier smiles, moves his shoulders and says nothing.

"You win," she says. "What do we do now?"

"I'm waiting for the rest of Harry's mob to come in," Ripples says. "Then we'll have the whole section tied up."

ALL the while this is going on, I realize all of a sudden that everybody's been talking in circles. What did they have tied up? And it came to me, like it'd come to Junior, only later of course, that I hadn't seen a soul in any of the streets or buildings, except these hoods. Where was everybody? What kind of a place was this?

"So what if you do?" I ask.

"It talks," she says. But she doesn't come close any more.

"Then I'll be kingpin," Ripples says. "I'll be boss of the workers down below. They'll produce for me."

"Who do they work for now?" I asked.

"You should know," he said. "Nobody. That's why you and your friend came up from below. To see if you could get to the top."

"Maybe we will," I said. I didn't know what he was talking about but I had an idea that what I said would get a rise out of him. It did. It also got a rise out of the rest of them. Especially the gal.

"As for those vermin below. Remember this. We up here control the gates. A pull at the switch and they'll all die!"

There was a tinkling sound from the desk against which Ripples was leaning. He switched the gadget on and a voice came out of the desk top.

"Boss, it's Bully Boy."

"Go ahead," Ripples leaned close to the desk and talked into the gadget. It looked like a glass box. The voice came out of it:

"Choppy never showed up. What'll we do?"

Ripples' brow drew straight across in a hairy line. His right fist pounded gently at the desk top. Then he talked, but fast:

"Leave fifty men there, just in case he does show. And if he does, call me. Tell Marty to get the rest together and get them back here, as fast as they can go."

There was a tiny click as the gadget went off.

"So Choppy outsmarted you," Luggier said in that soft voice of his.

"Maybe," Ripples said. "But only for a little bit. Wherever he is, he's only got the men who went with him. I saw to that. You see, Luggier, while you and Martha had that little rendezvous this afternoon, I sent out a few trigger men and we cleaned out most of Choppy's boys. And he never knew it because I left a few phone boys on the job, just in case he called. And he did, too."

"All right. All right! So you're smarter than we gave you credit for. Are we going to spend the rest of our lives here?" the woman said. Her voice held a high edge to it.

"No. We're leaving right now," Ripples said.

"Where we going?" Luggier asked.

"The caves," the big guy said. There was a broad smile on his face.

When he finally got going things moved fast. The two goons who were told off to take care of me, grabbed an arm each and hustled me out of the office after the rest. I'd remembered Choppy giving his men orders to cut the power on the elevators. But I guess

they didn't get to them. Ripples had a better organization. We crowded into two cars. There was that sinking feeling you get when one of those speed jobs sink, then the stop. The doors swing open and we're somewhere in the basement of the building.

RIPPLES, Lugger and the gal take the lead and walk to another door set smack against the wall. There's a push button about head-high which Ripples presses. The sheet of steel rolls up and another elevator slides into place. We pile into this one and down we go again. Only this is a longer trip. It must have taken us a good ten minutes.

I notice the boys got their hardware ready when we do stop. Ripples takes a fast look around to see that they're set for trouble then presses the out switch. The door rolls up and I think we went so far that we reached the hot place. There must have been a million red lights glowing down there. Then my eyes got accustomed to them.

There's a whole city down there. I don't know *how* I know it's a city but I do. Don't get me wrong. It's not a city in the way you'd mean it. There ain't no department stores showing the latest styles. There ain't no traffic lights, or autos, or street cars. Nothing like that. About the best way I'd describe it would be to say that the place looked like a big steel nest.

Those red lights were strung on the biggest girders I've ever seen. Mile on mile of them, as far as the eye could see. I couldn't see the tops of the black poles, they reached so high. There was only blackness up there. Down below, where we were, there was a dimness that was split by the wierd red glow of the lamps above.

Ripples went first, then me with my two bodyguards. After us the rest

trailed, Lugger bringing up the rear. The girl was somewhere in the middle. A good spot, I thought.

We moved along in the murky gloom, in a silence that, after a short while became frightening. A guy can be more scared of something he can't see than of any danger that's right in front of him. I ain't no exception. It was like walking through a half-lit graveyard.

If I was scared, the two Joes with me were petrified. They kept looking to either side like they were expecting to see ghosts. But Ripples moved ahead like it was open ground to him. Now and then I heard scurrying noises, like rats make when they're disturbed in a sewer. Whispering sounds come to my ears. It was as if there was something human there. Yet I couldn't lay my finger on it.

All of a sudden Ripples stops. The two guys and I pull up short. And the rest of the mob comes up to keep us company.

"Anything wrong, boss?" one of them asks in a whisper.

"No. Just trying to get our bearings," Ripples says.

"Well, where are we?" another guy asks.

"The third level," Ripples says. "I think we have to get to the next. All these were emptied during the revolt of the scientists."

"Hey!" the first voice said. "That was over three hundred years ago."

"Sure. That's why the people down here never came up. They're blocked off at this end."

"Well how did Choppy get his gang together, then?"

"What's the difference?" Ripples asked. I could see he was peeved by all the questions. "When I'm through with him and his gang it won't make any difference to them either."

There was some laughing at that.

Then Ripples started again and we trailed along like before. We must have gone a mile through the twisting tangle of poles, before we got to the level Ripples said was his goal. I figured it must have been by the way he sighs and stops short. Once more we gather round.

Ripples points to something and says:

"Beyond that spot is Choppy's hide-out. That's where he's been hiding all the power."

I LOOK to where Ripples pointed and saw that it was to a hole, darker than the rest. But as we approached it, the darkness was lightened by arc lights that blazed familiarly white. I wondered how all of a sudden it became light. We were coming to an angle in the maze of poles.

Ripples walked a little faster as we came closer. Man! It was as bright as day in that hole. My eyes popped when I really saw what we were walking into. It was the biggest engine room in the whole world. As far as my eyes could see there were generators, turbines, tremendous engines that were tall as skyscrapers. And they were working. When Ripples opened his mouth the words were lost in the hum of the engines. He had to stop and we all crowded around. My guards forgot all about me. I could see that most of them had never seen this place before.

"This is it," Ripples shouted.

I thought I heard an echo to the words.

Then there came the sound, that never-to-be-mistaken sound, of gunfire. One of my guards grabbed at his chest, as if he thought he was going to stop the blood from pouring out, ripped at the material of his suit, screamed something before the blood poured out of his mouth and fell to the ground.

I was already flat on my face long before he reached my side.

But Ripples was smart. The light was so bright in there that when they looked into it they were blinded. And whoever was doing the shooting was behind that white glare. Ripples didn't give any orders. He just turned tail and ran; back to the place where only the red arcs shone and it would be playing hide and seek if they wanted to find him.

But when they go, I stay. I don't think they even missed me. I don't have long to wait. Pretty soon I hear the sound of feet sliding along the concrete. I have my arms folded over my head and I roll a little so I can peek from under them. And the first thing I see is the face of my little friend, Junior. I must have scared him out of his pants when I jump up and throw my arms around him.

Then the rest of them are around me. Choppy, as usual, hogs the talk stuff.

"There's only one thing I'd like to know," he says. "Did you hear anything about Ripples bringing up re-enforcements, while they held you prisoner?"

I told him what I heard.

He nods his head, then takes Farbish to one side.

Junior's standing so close to me a guy'd think we were twins. I can see he's busting wide with excitement. And when he turns and looks at me I know I'm right. It's as big in his eyes as a grab bag is to a kid.

"Eddie! Eddie," he stutters a little trying to get it out. "Man what we've stumbled into. Listen, before the excitement starts again. This is what they're battling for. This room here. It holds the balance of life for all this land. Choppy told me while we were riding around in those cigars they call cars.

"A long time ago there was a terrific fight between all the nations. Nobody won. The only thing that happened was that more than three quarters of the peoples of the world died. From atomic explosions and what happened as a result of them. So they outlawed war. And they put up this screen.

"This room provides the power for the cosmic ray screen. If these engines go off, the atomic energy still in force will be put to its terrible use. And the man controlling this room holds the fate of the whole world in his power."

TO TELL the truth, I'm only listening with one ear. I'm too busy looking at the characters around Choppy and Farbish. If they didn't look like the seven dwarfs, I'll eat my hat. I don't mean there were seven of them only. There were maybe fifty or sixty of them. But what characters! They were on the average around four feet high, stooped, round-shouldered, half-naked and dirty, with hair straggling over their faces like a mat that had lost the sign, welcome. There were a couple that had their faces turned in our direction and I got a good gander at them. Wow! In a couple of years they'd begin to look like something to haunt your dreams with.

Then the whole mob came toward us. They're jabbering away eight to the bar. Even Farbish is talking. But Choppy was the boy who was telling them. They're waving their arms and just before they reach us one of them hauls at Choppy's arm and stops him. We can then hear the dwarf's thick voice:

"You must leave some men down here to protect the engines."

"I will. I will," Choppy says. "Enough and more. But we must take care that Ripples and his gang are wiped out."

"And that's okay with me," I say.

Farbish plants something in my hand and I look at it and see that it's a heater. The guy wasn't so bad after all. Or maybe he discovered that it paid to have me on his side. But there's no time wasted as far as Choppy's concerned.

"Shall we be on our way, gentlemen?" he asks.

But does he wait for an answer? No. He just hits for pay dirt. The whole gang with a few exceptions trail after him. Only this time we don't move fast. The white glow of the big arcs fade into the gloom and queer red half-light.

Choppy brings us close to him after we're well in the dark places under the girders.

"We will have to fan out here. It means that you will have to be very careful not just alone for yourselves but for your friends. In this darkness there won't be much chance to see anyone. So before you shoot, make sure who you're shooting. Beat your way to the elevator landing of our building. We'll meet there."

Junior and I get just far enough away where nobody can hear us and Junior says in one of those confidential whispers:

"Eddie, listen. We can't go, or rather we're *not* going with the rest. We're getting out of here and back to the sphere."

I'd almost forgotten that big steel ball. And the past, too.

". . . It can't be too long, now," he's saying. I didn't hear what he'd said before. But I guess it wasn't important.

"So what do you want us to do?" I ask.

"Get back to the sphere, you dope," he says in disgust.

I'm a patient guy. So I say again, "Yeah, I know. But what do you want

us to do?"

It dawns on him.

"Oh. Well here's my plan. Choppy and his boys are searching for Ripples. And I'm sure Ripples isn't wasting time waiting around. Or he's going to fight it out, down here. So those elevator landings won't have anyone on guard. That's where we're heading for."

It sounded all right with me. Except, as far as I was concerned, I couldn't find them to save my life. But he could. He said so.

I DON'T know how long we traveled before Junior admits that he's lost. So am I. But I was lost from the beginning. We lean up against one of the posts and look at each other. His face is working, every muscle twitching like he was in fever. He pounds a fist in his palm and his eyes go looking around like he thinks there's a sign that's going to tell him where the exit is. Me, I just lean against the post and wait for things to happen. That's the way this place impresses me. A place where things is always happening.

"It's got to be around someplace," Junior says after a few minutes of this gazing at space.

"Sure," I agrees. "But where?"

He throws his hands up and a spark shoots from the gadget on his wrist. I don't know why but I say, "Do that again."

"Do what?"

"Throw your hand up like that," I say, and show him what I mean.

"Your indicator," he says slowly. "It reflects light."

"Yeah," I say. "But where does it come from?"

"Hold it up," he says. "And keep it up."

I do like he says and he looks at it for a second. Then he has me turn at different angles.

"That's it!" he stops me.

He turns and looks down the long avenue of red streaks. And I see it too. A small white line way off in the distance. There's no more talk. The both of us start in the direction of the white light. It gets more and more light as we get closer. I guess right off what it is. The same place we'd left. But I was wrong about one thing. The entrance. There were two of them. And we came into the other one.

It was impossible to see the end from either entrance. There was only one thing to do. Walk until we came out the other way. That was a job. Because when we were about half way through, we came to a place where we couldn't go further. There were a couple of the biggest engines I've ever seen right smack in the middle of the road. And they covered the road from one side to the other.

Junior looks at the big monsters and shakes his head.

"I should have known," he says. "These turbines have double controls. Eddie, it looks like we'll have to find Choppy. Otherwise we'll never get out of here."

For the first time, I decided to take over. Maybe Junior was a scientist and knew a lot about some things I didn't. But when it came to dealing with situations like these, I knew a hell of a lot more than he'd ever grow up to learn. I said as much. And the funny thing is, he agrees with me. So that puts me in the saddle.

"Now first of all," I say. "This'd be the first engine that didn't have a catwalk. So let's meander around."

Did I know my engines or didn't I? About three quarters of the way around I spot it. A ladder leading up, like a steel spider web. I trot up and up until I think it's going to wind up somewhere in one of the buildings above.

Then the ladder levels off.

We're on top of the housing now. It's a straight walk to the other side from there. We trot along until we reach the one leading down. But we don't go down. From our view, we get a whole shot of the battle that's going on below, and what a battle it is. Ripples must have gotten his re-enforcements.

WE'RE laying flat on our bellies on the cat-walk. Just below us Choppy's got his boys in a big half-circle with the end guys behind some of the big posts near the entrance. Ripples and his men have infiltrated until they're scattered around all over the place. There's gun flashes from all sides. Man, I thought, what I'd give for a carbine. And it comes to me that all I got to do is come down and get one from one of Choppy's boys.

"Where are you going?" junior asks, when I get to my knees.

"Get me something besides this cap pistol," I say.

"What for?"

"Those guys are wide open to any guy shooting from up here," I say.

"Wait."

"Huh?"

"Don't you think Choppy would have thought of that?" he asks.

"Maybe he's too busy to see that?" I say.

He starts to say something else, but I'm not there to hear it. I can hear him scrambling after me. I take the last steps in a jump and land almost at Choppy's feet. For a fat guy he moves pretty fast. That carbine has me covered before I can duck. It's a good thing he recognizes me. I don't give him time to think.

"Quick!" I yell. "Give me a rifle and send a couple of sharp-shooters up with me."

And I grab his gun and start back up the ladder. Only this time the other boys got ideas too. I hear the whine of lead and the sharp spat and clang as they hit and bounce off. I'm almost at the top and something hits me and knocks me flat against the ladder. It takes me in the shoulder, high.

It doesn't take until I'm on top, that I'm all alone. I look down and see Choppy and junior moving their arms for me to come down. Nuts! I want a couple of shots at those jerks near the entrance. The bullet had hit high, so I was able to lay the butt of the gun in the hollow of my shoulder. It felt good there. I snuggled up close to the stock, got a blond haired guy in the sights and pressed at the trigger. The gun jumped a little and a small feather of white smoke came out of the barrel. The guy I had my sights on gets to his knees when the bullet hits. That was as far as he got.

All of a sudden I hear Choppy's below, even above the sharp sound of the rifles:

"Get off there, you fool."

Something about the way he yells, something in his voice gets to me. He doesn't want me up there not because *my* life is in danger, but because of another reason. And for the first time in my life, I follow orders.

The shoulder begins to hurt by the time I get off the last step. Choppy and Farbish, both at a half-crouch, come charging up at me and grab me. Choppy's mouth's going like a fire engine pumper.

"You idiot! Do you want to blow this whole planet up? Get over here!" he drags at my arm from one side and Farbish drags at me from the other. Between the two I slide down beside junior. His face is pale and scared-looking.

"Eddie! God, man. It's lucky you

heard us. There's an open valve on that side. If any of those bullets had hit it . . ."

Choppy's looking around, his face worried and his eyes screwed up in thought. Then his lips tighten and he says:

"There's only one thing to do, get in close. I don't think they can take it."

"You mean," Farbish says, "rush them?"

"That's it."

"Now that's meat on my table," I say.

"Let's go then," Choppy says. And gets to his feet, his hands waving for the rest of his boys to follow.

ALL I know is that Junior is at my side. And that in a few seconds there was going to be a knockdown fight. That was all I needed to know. I was happy.

I was only looking for one guy, Ripples. There were six or seven guys in a tight mob about in the middle. I hear a voice yelling something and realize it's mine. Then I hit that gang from an angle and plow right through them, my rifle swinging club-fashion. Something clouts me at the side of the skull and I go to my knees. There's a blood-red cloud in front of me. The gun drops from my hands and I rest my hands on the concrete, waiting for my senses to come back to me.

There's the wildest screaming going on all around me, like a million Indians had been let loose. Somebody's tugging at my arm and I look up to see junior. He's got one arm under my armpit. All of a sudden there's the sound of a shot from close up and junior folds up on me. There's the funniest look of surprise on his face. Then there's nothing but blood on it.

I guess I go a little crazy then. All I remember are flashes. There's one

where I've got some guy by the neck. My hands tighten and there's a sound like when you snap a stick in two. And the guy in my hands goes limp. There's a blond that I somehow seem to know. And there's a woman tugging at my arm while I bend the blond over my knee. I hear her scream, her and him. Then he's quiet. And she's gone. But there is one guy I'm still looking for, Ripples.

And all of a sudden he's in front of me. I know there is somebody laying between us, Farbish. But I only know that Ripples is in front of me. He just looks at me and something in his hand crawls higher until it's at the level of my chest. I hear a dull boom and something pushes at my chest. There's another boom, this one from a little further off. Then I lean forward and Ripples is in my arms. I feel laughter gurgling in my throat as he hits at my face. It's like a kid hitting me. He manages to get one hand free. He hits a little harder now. He's got something in his hand that hurts. Me, I'm just sort of getting my strength up for what I want to do. I know it won't take long. Just until I can get some breath in my lungs. There's bright flashes in my brain. And I know that I haven't got time to wait. It'll have to be now!

My hands crawl up until they're around his throat. Like magic, my vision clears. Everything is clear now. I was going to die, I knew that. Those explosions. They were shots. I could feel the blood draining from my body. His eyes are popping from his skull. But deep in 'em is something desperate. I can't feel the hand that held the thing that hurt. But he's bringing it down to hurt me again. I don't care. What I had to do would only take a few seconds.

Liquid fire shoots through me. He had got the gun down.

With all the remaining strength in

my arms I bring my thumbs toward each other. There's a strangling sound that comes from the mouth that's close to mine. And suddenly, a flood of crimson spouts from his mouth right into my face. And Ripples is dead. I can feel the muscles putting a grin on my face as I go down.

"Look!" a voice comes through the pain I was feeling.

"It's the woman," another says. "She's by the valve. No!" the voice screams. "Don't!"

There's the sound of a shot. And a million lights go off in my brain. It's a funny thing, but just then all I could think of was, imagine dying in the year four thousand!

* * *

"Eddie! Eddie!"

"Huh," I look around. We're in the bucket seats of the time sphere. "How did we get here?" I ask.

Junior's fiddling with the controls.

He turns to me after he's got them set.

"Look, Eddie, we'd better not say anything to Janice about what happened."

I had one thing on my mind. I was dead. I know I was. And Junior agreed.

"Sure," he says. "But *when* did you die?"

I got it. I had died in the future. But . . . not in the past! . . .

"I know what you're thinking, Eddie," he says. "But I guess we can't tell anyone. Nobody'd believe us."

THE END

COAT OF MANY COLORS



By Leslie Phelps



THE father of spectrum analysis, that important modern tool for probing into the depths of stars and atoms, was appropriately named "Joseph" Fraunhofer. Like his biblical namesake, it was given to him to be involved with radiant colors, but his was not a mere coat—it was Light!

The famous Sir Isaac Newton did the first work with spectra when he discovered that a triangular glass prism would disperse a beam of sunlight into its component colors. White light was shown by this great physicist to be a mixture of all the colors of the rainbow.

Joseph Fraunhofer was a poor Bavarian boy who had been apprenticed to a mirror manufacturer. One day the ruler of Bavaria happened by chance to be walking down a street in Munich when before his eyes he saw two old houses crumble into rubble. Of all the inhabitants of the houses only one small boy escaped. Pitying the lad, the Elector gave the boy all the money he had with him. Gratefully Joseph Fraunhofer bought his freedom from his "employer" and spent the rest on books and apparatus for lens grinding.

After a time, his diligence made him the foremost optical worker in Europe. He made lenses for large telescopes and obtained a thorough grounding in both practical and theoretical optics.

In the course of this activity he made a discovery of earth-shaking importance.

He repeated the experiment of Newton, using a thin vertical slit to provide him with a beam of sunlight which he allowed to pass through a prism of his own manufacture. In back of the prism he allowed the light transmitted through it to pass into the objective lens of a small telescope, thus magnifying the rainbow image so produced.

Close examination showed that this "spectrum" was crossed or laced by hundreds of fine tiny black lines. Repetition of the experiment innumerable times showed that the black lines always preserved their same relative positions. He counted more than five hundred of them, and he assigned a letter of the alphabet notation to them which is still used.

Unfortunately, he did not explain their meaning. That remained for two Heidelberg physicists to solve. Regardless, Fraunhofer made the discovery—an honor in itself.

Bunsen and Kirchhoff, the two physicists, solved the mystery of the black lines. They clearly showed that when a substance in the form of a gas was heated to a high temperature, it gave off a spectrum consisting of only a few extremely bright lines, but these lines were always the same for a given element and were in the same relative

position.

Now when the light from such a glowing gas was passed through a cooler gas and then examined spectroscopically, the bright lines would no longer be there! Instead in their exact places would be black lines. This "absorption spectrum" then could be used to identify a radiant substance just as could a bright line spectrum. Thus the hot outer layers of the Sun radiated light which had to pass through the cooler atmosphere of the Earth producing those well-defined black absorption spectra lines.

Spectrum analysis has made it possible for Man to reach out then and examine things which would have been completely beyond his ken without it.

The number of black lines visible through a spectroscope is also dependent upon, not only the substance emitting the light, but the temperature, the pressure, the conditions of electrical and magnetic influence and several other factors. Consequently a study of spectra can reveal a surprising

amount of information about a star.

Many of the chemical elements have been identified in the Sun. Those that have not been are assumed to be there. It is only a matter of time before they too are found.

The spectroscope as an earthly tool, is also invaluable. A spectroscope amounts to a rapid-fire chemical laboratory. Industry is using spectrum analysis more and more and most modern steel plants depend upon it for instantaneous analyses of their product.

The idea of the spectroscope has been applied to atomic physics and the mass spectroscope is the result. This ingenious instrument is really a spectroscope for separating atoms as the conventional one does visible light. Its use in developing the atomic bomb is well known.

Joseph Fraunhofer had no idea of the scientific wonder he unleashed when he first observed those little black lines. What would he say now?

* * *

MINUTAE

By Cal Webb



NOT so long ago it would have been said that it was impossible to see a molecule and for most purposes this is still true. However, the electron microscope has managed to pinpoint some of the larger molecules, so that we can get a schematic representation of the little thing.

A law governs the seeing of objects, a crystal clear law; an object smaller than half the wavelength of the incident light used to view it, cannot be seen. This law rules out our seeing electrons, atoms and most molecules.

Fortunately it isn't necessary to see this minute atomic world to work with it. Science does pretty well with what it has. Consider some of the actual sizes of molecules, atoms and electrons and marvel that we are able to deal with them at all. The size of some of the largest molecules known, huge molecules of protein is in the neighborhood of about a ten-millionth of an inch! An optical microscope is incapable of seeing anything smaller than a hundred times this size. The smallest molecule, that of hydrogen gas, is one one hundred and twenty-five millionths of an inch in diameter. Is it any wonder these almost invisible etheric things remain so?

The case of atoms is of course, worse, because they are smaller. The largest atom, that of Uranium, is not proportionally larger than the hydrogen atom because all that it is, is an increased complex electronic structure. The hydrogen atom i.e. the same thing as the hydrogen molecule, has of course, the diameter mentioned above, a hundred and twenty-fifth millionth of an inch. The diameter of the Uranium atom is two and a half times as great. This makes it a hundred

millionth of an inch across.

Determining the physical size of the electron however, is another matter. Usually this must be done indirectly because there is that "ol debbil," the Uncertainty Principle to thrust up its ugly head. It states that velocity and position cannot be known exactly—that is, both quantities—though either may be known alone to the desired accuracy. However, from a knowledge of the electric charge of the electron the physical size can be estimated. It is believed that the electron is about a hundred thousandth the size of the hydrogen atom!

In the nucleus of the atom the physical sizes are still less. While the proton is eighteen hundred and forty times heavier than the electron it is only about one eighteen hundredth the diameter, which makes it about a forty-five quadrillionth of an inch. Naturally the neutron which is so similar in everything except charge, is the same in size.

There is an interesting fact to consider about atomic dimensions. We think of the solar system as being mostly empty space. The atom is even worse. There is more empty space in an atom in proportion to the masses involved than there is in the solar system, by a factor of ten thousand!

The truly amazing thing about all this is merely the fact that we are able to know it. Here we are dealing with particles which we can never see and which we know about only through indirect inference. Yet we speak of them as confidently as we do of something like, say, a house, or a car. We know them through the "mind's eye" so to speak. And it's a powerful eye, indeed.

* * *

SURVIVORS in SPACE



By CHARLES RECOUR

Being lost in the dark vastness of the outer void was a spaceman's greatest fear. For no man had ever been known to survive such an ordeal...

IT'S beautiful Jan, but somehow it's so cold. Imagine how horrible it would be to be lost out there."

Those were the words that started

it all. Jan shook his head groggily and tried to clear the mist from it. But the words kept coming back to him. He could see her lips framing them even in the kaleidoscope of con-



The powerful lamp on his helmet shone through the blackness and illuminated the twisted hulk of what had once been a space ship

fusion in his mind.

He lay on the rubber floor and let consciousness seep back. He looked at the huddled figure on the floor. He tried to focus on her but his eyes wouldn't obey his will. He made a strenuous effort to rise but it was too much for his weary, weakened muscles. With a groan he sank back again and let the darkness wash over him in blissful oblivion—but not quite. He saw it all again . . .

* * *

"Do you good, Son. I'm all for it," his Dad had said in the functional offices of Gearing Enterprises, Inc. "The Martian run to New Chicago, then a stop-back at Luna City—a taste of deep space'll do more for you than you think. Take it as a graduation gift. Then if you still want to stay in physics, go ahead."

"Thanks, Dad," Jan Gearing said. "I can use the change. My head's so full of differential equations, they're coming out of my ears. I'll probably be glad to get back to school after I come back."

The gray-haired man shook his head. "Don't be too sure about that, son. I've seen many a man get a taste of rocketry—and then decide to stick with deep space. It gets in your blood. Don't you remember your first Lunar trip?"

A broad smile spread over the tall, handsome, younger man's face.

"Naturally," he said, "but communication engineering is pretty fascinating too."

They talked for a half hour. Jan booked passage on the *Bellerephon*, for New Chicago, a crack new ship powered by atomics and used on the Martian run.

There were the usual attractions of space flight, the peculiar sensation of all-embracing acceleration, then the

lofty floating of completely constant velocity, then the standard one-grav acceleration for the major portion of the flight. The visits to the astrogation and control rooms. The periscopic peeks at the heavily shielded atomics. The incredible awe of gazing into the fathomless depths of space and being so utterly impressed. But all these things palled after a while, even on the most complete tyro, much less the experienced traveler, and soon the conventions exerted themselves. There were teas and dances and cinos, parties and games and social events, just like any hotel on the planet. And everyone seemed to quickly acquire the bored, blase attitude that is a characteristic of travelers everywhere, whether they are going from Chicago to New York via monorail, or whether they're bound for Mars via an atomic powered rocket.

ON THE third day out, Jan's interest in deep space and rocketry in general received a powerful stimulus. He met Lianne Stewart. She was young and beautiful, just out of school herself, and before he quite knew what happened, Jan was escorting her everywhere. She was filled with such inquisitiveness and zest for living, such overwhelming enthusiasm for the most commonplace things that in a short while he was conducting her all over the *Bellerephon*, explaining with all the earnestness of a ship's officer, all the technical aspects of the ship that he knew about—plus a good deal he didn't and more than once he dipped into the extensive ship's library to straighten himself out on some obscure points. Lianne ate it up and asked for more. She seemed to have an insatiable thirst for knowing about everything and Jan was hard put to keep up with her. But he did, and he couldn't be blamed for the fact that every now and then his

eyes strayed from the subject at hand to the fascinating way her rich black hair curved over her neck, or the unbelievably interesting way her mouth pursed when she said "no." He couldn't be blamed for his accurate observation of the symmetry of her figure or the similarity between the blackness of space and the depth of her eyes.

And she liked him. Any number of handsome officers and unengaged males aboard the *Bellerephon*, were more than anxious to tutor the girl, but she stayed with Jan for everything from a ship's dance to an inspection of the radar room which housed the meteor-warning and deflecting-control apparatus.

The trip became more and more interesting by the second and when Jan suggested an inspection of the lifeboats and Lianne evinced great enthusiasm, he was more sure than ever that the trip was going to turn out to be the most worthwhile thing he had ever done. She liked the same things he did, and she heartily approved of his going back for further work in communication engineering.

They entered the airlock of the number six lifeboat. Jan punched the button. The door slid back. Lianne stepped through. Jan followed her and the door closed. The second door opened similarly, the green light above it indicating that the lock was airtight. They stepped through the second door which closed behind them and found themselves in the chamber, one of ten similar ones, which housed the emergency life-craft. These were small vessels identical in purpose to their progenitors aboard sea-going vessels.

Jan took Lianne's hand and led her around the cradled vessel. It was an ellipsoid six meters in major diameter and looked somewhat like a squat blunt cigar. Its mathematical symmetry was

marred slightly by the protruding jets of the power plant in the rear, while its nose and front half carried the usual quartzite ports that seemed like eyes in the head of some monstrous fish. The only other externals were a couple of antennae for communication.

"Jan," Lianne squealed, "it's beautiful! It's just like a baby nestling with its mother."

Jan laughed, a booming sound that reverberated in the small metallic quarters. "I never heard it put that way exactly," he said, "but it is a nice looking job. System Law makes them compulsory aboard all craft larger than thirty meters."

"I think it's a good idea," Lianne said.

"Yes and no," Jan said smugly.

"What do you mean, 'yes and no'?"

"Anything that can happen aboard a big ship like this," Jan explained, "would probably happen so fast, that we'd never get a chance to get anybody into these babies."

"Ugh!" Lianne exclaimed. "Don't say that." Jan noticed the intriguing way her nose wrinkled when she expressed distaste.

"All right," he conceded, "I won't say it again—but I still believe it."

"Can we go into the space-boat, Jan?" she asked suddenly.

"Well, it's not supposed to be done," Jan said, "but we're passengers, paying ones too, so the bridge will probably do no more than warn us."

"Can they tell we're here?"

"Certainly. This thing is so wired and equipped that the control room can tell every time a passenger or a crewman blows his nose."

JAN pressed the stud that opened the lock on the little craft. He crawled in the cramped little space with Lianne right beside. He liked the coziness, but

he couldn't wait there forever unfortunately. He closed the outer door and opened the inner.

Lianne exclaimed with glee at the pint-sized interior. "This is really cute, Jan," she said.

"Yes, it is 'cute,'" Jan agreed, but his eyes were on Lianne's face rather than the space-boat. "Take a look into deep space from a lifeboat," he said. "It'll give you a thrill."

He pushed the button that slid the steel covering from the quartzite port, and the two of them stood side by side looking through the port of the lifeboat through the bigger port of the *Bellerephon*, into the star-studded glory that was space.

Lianne's breathing quickened at the tremendous impressiveness and beauty of the sight, added to by the feeling of entombment in the spaceboat, and she sighed tremulously. Jan stood near her, brushing her side and his hand found hers. They stood that way for a few minutes.

"It's beautiful Jan, but somehow it's so cold. Imagine how horrible it would be to be lost out there," Lianne said softly.

Suddenly there was a faint shrill whine as a warning siren shrieked. The lights in the life-boat enclosure dimmed momentarily, flared into brightness—then went out. In an instinctive gesture of protection Jan's arm went around the girl and cradled her to him, nor did she shrink away. He was more conscious of the perfume of her hair than he was of the alarm.

"Abruptly there was a terrific shock. Jan felt himself torn from the girl. He saw her spin against a padded stanchion. He was swept completely off his feet by some massive wrenching force against which resistance was useless. The lights went out everywhere, and only her last remark repeated itself

in his mind.

"... How horrible it would be to be lost out there ..."

AFTER an eternity Jan came to. His body felt wracked and beaten and he was stiff in every muscle. But he forced himself to awareness. He crawled over to the girl. She was still breathing. Straining, he cradled her in his arms and carried her over to one of the acceleration couches. Carefully he set her down and a cursory examination showed that she was unhurt. He got up and flipped the buttons on the other two quartzite ports. Their steel shutters slid aside and he peered into space.

He glanced at his watch. He had been unconscious for no more than seven or eight minutes. Something was bothering him. Then he realized—the little space-boat had normal gravity because the automatic trip levers that had thrown her from the *Bellerephon* had also sent her spinning away with a one-grav acceleration!

What had happened to the *Bellerephon*?

Jan knew practically nothing about practical astrogation but he realized there was no point in getting any farther away from the *Bellerephon* than necessary. If there was any hope of rescue it would lie in being near the big rocket. He went over to the control board and flipped the power lever. Instantly the "six"—as he christened it in his mind—ceased accelerating, assumed a constant velocity, and everything became "free"—weightless.

He was not used to this condition though he'd had a few tastes of it. But it caused him no nausea and so it was perfectly endurable. He'd apply power as soon as he found out where he wanted to head toward.

The slightest motion, the lightest

touch would send him skittering all over the Six but there were numerous handholds. So it was not too hard to manipulate himself about the ship. Jan went over to the acceleration couch to which he had fastened Lianne.

Color had come into her face and she was coming to.

"Wh-wh-what happened?" she said slowly. She moved slightly and almost bounced off the couch. Jan's arm held her down.

"Take it easy, Lianne," he cautioned her, "—constant velocity—no grav. Do you mind?"

"No," she said, puzzled, "I feel all right—except here." She touched her head. "Ouch! What a lump. But what happened, Jan?"

Jan shrugged. "I don't know." He helped her assume a vertical position where with no further assistance she "floated."

"Something must have gone wrong—maybe the radar meteor detectors blanked out. The *Bellerephon* was hit maybe by a big one. The shock felt like it. Anyhow, miracle of miracles, we happened to be in a lifeboat. The automatic trips and the shock threw us clear. One of us hit the power control—until a minute ago we were moving at one-grav. I cut it off. I think our best bet is to get back in the vicinity of the ship as soon as we can. We'll stand a lot better chance of being picked up."

"Can't we astrogate this boat somewhere?" Lianne asked.

"We could, probably, but where and how I don't know yet."

"You mean they'll be keeping a watch on the Martian lane? I see. Fine, Jan. That's the best idea. But how do we find the *Bellerephon*?"

JAN grinned. "I haven't figured that out yet. But it won't be too hard—

I hope. See, Lianne, even though we accelerated for a few minutes away from the *Bellerephon* we still have the intrinsic velocity of that ship. That means that while we're moving away from it, we're also holding a component of velocity parallel to it. Our first problem is to locate it. The no-grav doesn't bother you, does it?"

"No," Lianne replied. "In fact, the lump seems to hurt a lot less." With a flick of his fingers, Jan shot across the small vessel's interior and brought himself to a stop against the water supply. He wet down a handkerchief from the water supply and brought it over to Lianne, where he bathed her bruised forehead.

A frightened look came on Lianne's face. "We're not lost, are we?" she said in the small anxious voice of a child.

Jan laughed. "No. No. Far from it. Don't worry Lianne. With this lifeboat we're as good as if we were in a liner. The only horror about being lost in space is if you've got nothing but a space-suit. I had the chills for a few minutes when I came out of it, until I realized that we're practically in our own living rooms. As soon as you feel all right, please give me a hand—rather, an eye."

"I'm sorry for behaving like a baby, Jan. What do you want me to do?"

"Well, the first thing we have to do is find the *Bellerephon*."

Lianne and Jan floated across to a port and peered into the coldness and grandeur of the vast emptiness. But it was almost impossible to locate anything amidst the brilliantly pin-pointed depths. They couldn't possibly examine the solid three hundred and sixty degrees of space around them visually. There was no way to spot the *Bellerephon* optically without the most lavish of optical comparators.

Lianne said abruptly: "Jan, how will we ever find it? We've been moving away from it at a fast pace."

"I'm no astrogator," Jan admitted, "and there's no way to tell our present velocity except by a timer on the power plant. My God!" He suddenly shouted. "Of course there's a timer!"

He kicked himself over to the control panel. He flipped the switch on the radio monitor in hope that something aboard the *Bellerephon* might be transmitting. If so it would be easy to ride the beam right to the stricken ship. But the loudspeaker remained dead. Jan adjusted the sensitivity. Still no sound.

"We're not going to track it down a beam," Lianne said, "that's for sure."

"I don't understand that," Jan said. "Automatic distress transmitters should be sending out pulses—unless somebody's deliberately cut them off or they're all wrecked."

"Why would they do that?" Lianne asked.

"I haven't any idea," Jan replied. "Well, now let's find out where we are." He bent over the complicated mechanism of the timer. Jan was no mechanic, but everything aboard a lifeboat is arranged for simplicity so that it may be operated by the most inexperienced personnel. The "timer" was a collection of accelerometers carefully metered by an oscillograph whose face was observed continually by a sensitive film. The trace appeared on suitable recording devices so that any accelerations were closely and carefully measured. All the while the time was carefully noted. Then knowing the accelerations involved, the length of time they had been acting, it was a simple matter for automatic integrators to know the resultant velocity. In turn this was integrated to give the distance to be known.

Jan studied the instrument for a few minutes until he had a mental picture of how distant they were from the abandoned *Bellerephon*. Anxiously Lianne awaited his conclusions.

"Well . . ." she said.

"I think I can set a course that will bring us within visual sight of the ship," he said at last. Jan knew nothing of the technic of piloting a space craft—at least from personal experience—but he was intelligent, the controls were simple, and all it required was a certain amount of horse sense.

He set to work, aided by Lianne.

FIRST he set the gyro in motion which turned the space boat around so that her tubes pointed in the direction the little vessel was traveling at constant velocity. Now it was pointed wherever the *Bellerephon* was because Jan had made it an exact one hundred and eighty degree turn. The little gyro set up a torque. Its support set up a counter-torque—and since its support was the life boat itself, the little craft did the turn about.

Carefully Jan applied power to the rocket drive. He set it at a half-grav, then set it to stop at half the time it would take to reach the hulk of the *Bellerephon*—subconsciously, he thought of it as a hulk—when he would again swing the ship about and give it a negative acceleration, so as to arrive at the *Bellerephon*, with zero velocity with respect to that vessel.

Even in the consideration of it, as Jan explained to Lianne, it all sounded so much more complex than it really was. But space navigation was like that. It was not simply a matter of flitting from one spot to another. Time, accelerations, and velocities had to be carefully calculated in order for space vessels to meet each other without devastating crashes. For one ship to approach an-

other for example, required that their velocities be matched, boarding then taking place by a very gentle bringing together of the ships.

When Jan started the drive it had been about an hour since the smash-up of the *Bellerephon*. It would take about twice that time to return since he applied but half the original acceleration.

The automatic apparatus took over everything and almost at the precisely calculated time, Jan suggested they start looking for the injured ship. The two of them peered through the ports, straining their eyes to spot the missing ship. It was Lianne who saw it.

"Jan! Jan!" she cried exultantly, "there it is! See. That light spot over there."

"Where?" Jan tried to follow her pointing finger. Then he saw it too. The *Bellerephon*, a dead ship, a gaping hole in her bow, drifted at a constant velocity, its course now paralleling their own.

"This won't be hard. Let's get into space suits, Lianne." Jan ordered. "We'll go aboard her and see if anyone is still alive. I have my doubts, though. Look at that hole. It must extend from stem to stern. Only one thing could have done it—a meteor."

"We always thought meteor detectors were infallible." Lianne said bitterly.

"They are—when they work," Jan said. "This must have been one of those freak accidents that couldn't happen—but did. In the first place the odds against a ship being struck by such a huge meteor are tremendous. Secondly the possibility of the failure of multi-meteor protectors is also obscure. They—"

"—the *Bellerephon* got hit." Lianne interrupted.

"I can't argue against facts," Jan admitted, "but just the same it's a rare

event. Down deep you know that too, Lianne."

"Oh, Jan, I don't care about the technicalities. Think of all those poor people. They didn't have a chance."

"I know," Jan agreed softly. "Don't think about it. Listen," he added as an afterthought, "maybe you'd better stay here, Lianne. I'll board the ship myself."

"Oh no you don't," Lianne quickly disagreed. "I'm coming with you."

It took quite a bit of talking but eventually Jan convinced Lianne that she should remain aboard the life-boat, not only because the sights aboard the *Bellerephon* would be hardly pleasant, but also because he would feel more secure with their little link with safety guarded.

Jan went through the lock. He linked himself to the lifeboat with a length of wire, then estimating the force required, he gave himself a velocity toward the *Bellerephon* fifty away, by kicking at the side of the life-boat. An experienced spaceman would have simply gone over on the little jet built in the suit, but Jan was far from experienced and he knew he would have a rough time should he miscalculate. It was perfectly possible for the little jet to kick him off into space, and he would be unable to make his way.

IN A few seconds, he brought up against the side of the ship. He slipped through a shattered port and found himself aboard the hulk. The sight that met his eyes shocked him. The horror of death was everywhere. In spite of the elaborate safety devices built into all space-craft, no ship could withstand such a blow as the *Bellerephon* had taken. By rights Jan and Lianne should be dead too. It was a freak of fate that they weren't. The torn, bloated bodies of crewmen and

passengers lay everywhere, in the grotesque attitudes of death. The expressions of the faces left no doubt as to the agony of their going. Inside the heated space suit, Jan felt a chill.

"Lianne," he called over the built-in transmitter, "I'm glad you stayed where you are. This isn't a pretty sight."

"Check everywhere, Jan," the girl replied, "someone may be alive."

"I doubt it. This ship is a shambles."

Never-the-less, he thoroughly searched the *Bellerephon*. Everywhere he looked the face of death appeared. After he had checked the ship completely he made his discouraged way back to the life-boat.

"Lianne," he said, "we're going to do nothing now but sit tight. Maybe by now, a check station has missed contact with the *Bellerephon*. As soon as that happens, you can bet that they'll send out a patrol ship but fast. So we rest."

Lianne was staring through a port. "Look, Jan," she said, "here's a patrol boat now!" He whirled and stared through the quartzite port. Hovering a few hundred feet away was a ship similar to the lifeboat, but about twice as large. Jan studied the vessel a moment, but there was no insignia to identify it as a patrol cruiser. He kicked himself over to the transmitter.

"Lifeboat Six — *Bellerephon*," he called, "with two survivors of a meteor crash—who are you?"

Their monitor was alert for the answer came back instantly. "Asteroid mining ship, *Lethe*, preparing to conduct salvage operations. Are there any other survivors?—and how many are aboard Lifeboat Six?"

"We are two passengers, Jan Gearing and Lianne Stewart. We have just checked the *Bellerephon*. We are certain no one is alive."

"Stand by. We will take you aboard as soon as we have checked *Bellerephon*, and taken aboard salvage."

The transmitter ceased and Jan and Lianne saw three space suited figures move expertly from the *Lethe's* lock over to the wrecked liner.

"What do they mean 'salvage'?" Lianne asked, a frown of puzzlement on her face. "I never heard of anyone doing anything like that. I thought the patrol was supposed to take over."

Jan's forehead wrinkled. "There's something wrong here. They're not supposed to do any 'salvaging.' Besides, what can they salvage? Listen, I'm going to go back on the *Bellerephon* and see what they're up to."

He eased through the lock once and gingerly made his way back to the wrecked liner. Once aboard it, he proceeded cautiously. He avoided the control cabin and started to move down one of the corridors proceeding through the passengers' quarters.

In the main salon, there were a dozen different bodies floating in the weightlessness of constant velocity.

Hiding behind a vertical stanchion, Jan saw the three figures who had boarded the *Bellerephon*, systematically going from body to body. He couldn't see exactly what they were doing—but he could make a good guess. The thought was horrifying in its grisly monstrosity. They were looting the bodies of jewelry, money and any objects of value. They had provided themselves with sacks, and like ghouls, they went from body to body, stripping them of valuables!

JAN was shocked. He had heard that many of the crews which mined the asteroid belt, were a rough and tough lot, but he never expected them to descend to this. Practicing piracy on the dead.

They won't get away with this, he thought. When the patrol finds out what has happened, there'll be bloody hell to pay. For a wild instant, he had an almost overpowering impulse to hurl himself at the three men, to batter and hammer at them with anything at hand. Then calm reason took hold of him and he realized the futility. First, they were experienced in maneuvering in weightlessness, whereas he was a tyro. Besides there were undoubtedly more of them aboard the mining craft. In addition, the clinching evidence of their criminal intent was the fact that one of them carried a pistol.

Jan watched them for five minutes. Ignoring everything, they concentrated on their grisly task, consumed with a desire for the numerous glittering specimens of jewelry, and other valuables they found.

As he gently kicked, floating himself along the corridor to the broken port through which he had entered, he took one last look back. They had seen him!

The three of them started for him without hesitation, and one was already drawing his pistol. Gas-propelled or not, a little old fashioned, it would still puncture his suit just as effectively as the most modern weapon. Jan literally fled.

He reached the life-boat well-ahead of his pursuers, for in order to fire their pistols, they had to brace themselves with their backs against a rigid surface in order not to be propelled backward by the recoil of the weapon.

Jan moved fast and he was inside the ship before their shots could be accurately aimed.

"What's happening?" Lianne demanded.

"They're looting the dead bodies of everything of value. They're systematically going over everyone and everything in the ship. We've got to stop

them!"

Jan closed the steel shutters over the ports so gunfire couldn't do any harm. The visi-plate afforded an adequate view of the happenings. Desperately Jan tried to think of some way to put an end to this horror.

Then it came to him! Use the life-boat as a projectile. He was no skilled pilot, but then he didn't have to be for the project he had in mind.

"Lianne," he ordered swiftly, "climb into an acceleration couch and strap down. I'm going to crash their ship!"

"They won't be able to get away then!" Lianne gasped. Then she sobered. "But what about us?"

"This little bay is small, but remember, just because of that it's strong. We've got our suits on so we don't have to worry about losing air. But they'll be forced to stay here till the patrol comes anyhow because I'm sure they don't have any sort of life-boat."

Jan locked himself in too. It was now or never. Through the optical sight on the visiplate he sighted on the *Lethe*. Outside he could hear the hammering of steel shod shoes against the sides of the life-boat, and the thunder of a pistol shot occasionally banging against its side in a futile gesture of anger. But this wasn't going to be futile.

Jan shoved the acceleration lever to maximum and punched the button, making sure that the optical sight was lined on the stern of the *Lethe*. The powerful hand of acceleration flung him back in the couch. For an instant he almost blacked out and through his phones, he could hear Lianne gasp, sigh and then moan.

LIKE a bullet from a gun, the little lifeboat's ugly ellipsoidal shape shot forward. Its velocity piled up in the few feet between it and the *Lethe*.

Like an arrow aimed true, its blunt nose struck the rocket tubes of the *Lethe*. With all that kinetic energy only one thing could happen. Those tubes crumpled into a twisted shattered mass of metal, and like a stone propelled by a kick, the *Lethe* banged into the side of the *Bellerephon*. More metal ripped, and for a brief instant, the sides of the mining ship were covered with frost as the air escaped, froze and then evaporated.

Lifeboat number Six crumpled at the bow and both Lianne and Jan blacked out, only momentarily. The instant the impact was over, Jan was out of the couch. The visi-plate was wrecked of course. He managed to get one port shutter free and the sight that met his eyes made him feel he had accomplished something.

"Look, Lianne," he said through his suit transmitter now that the air in the life-boat was gone, "I think we've stopped them."

He assisted Lianne or attempted to, but the effort was unnecessary for the girl was unhurt.

She peered through the port with him.

The lifeboat had hit the *Lethe*, shattered its rocket tubes, bounced it into the side of the *Bellerephon*, and then sent it skittering off into space. Jan presumed that anyone aboard it was still alive.

"The patrol won't have any trouble picking it up," he remarked.

"But Jan, what about those three horrible men who tried to kill you?"

"I don't know—" he said slowly, "they can't be—oh, oh. Look. Over there." He pointed.

"Where? Do you mean that—oh, how horrible!" Lianne covered her faceplate with her suited hands.

Jan looked at the spot for a long

time. One of the marauders had been ground between the side of the *Bellerephon* and the *Lethe* where they had struck together. And while neither ship possessed weight, there was enough mass there to grind into a pulp, something a lot stronger than a man's body. All that was left was a horribly distorted red smear that had once been a human being.

As they stared through the shattered port a silver dot crept into view. For a moment they were stunned. Unmistakably it was a patrol ship. Through the phones, Lianne could hear the rasp of breath as Jan exhaled in a sigh of relief. He turned to her, and his eyes were tender.

"There it is, Lianne," he said softly, "we're safe now—we're not lost in space. I don't think we'll ever be lost again."

She smiled. "I'm glad, Jan. Very glad."

In spite of the heavy armor of the space suits, in spite of the vacuum between them, Jan's hand reached out for Lianne's. He squeezed it with that age-old, unmistakable gesture and there was a warm light in his eyes, a light that seemed to answer a question when he felt the pressure of her hand in his returned.

The silver dot grew bigger and bigger until at last its forward jets were clear and visible as it braked itself to a stop.

Through their suit receivers they heard—"Bellerephon—are there any survivors. Bellerephon—are there any survivors?"

Jan nodded to Lianne. He saw her lips move.

"Lifeboat Six reporting," she said smilingly, "with two survivors. Lifeboat Six with two survivors . . ."

THE END

THE CRYSTAL BALL



By Marty Mesner



ACCORDING to the seers, the crystal ball is supposed to tell all. Peering into it tells the reader a lot. The practitioners of this art don't really realize how much can be learned from staring into a crystal. The only difference is, of course, that it must be done by a scientist—and he has to use x-rays.

It started back in the days when all the world was excited over the discovery of those magic radiations which we call x-rays. Dozens of scientists were trying to figure out exactly what x-rays were. But they had a tough time. They suspected that they were electromagnetic radiations similar to ordinary light, but the x-rays apparently lacked some of the properties that a true wave should have. For one thing, they penetrated matter, not reflected from it. For another they didn't show the bending or refraction effects which regular light does. Then while the research muddle puzzled many, as often happens, a scientist got a brilliant idea.

Perhaps he thought x-rays are exactly like visible light, but their wave-length is so short that no effects can be observed because the waves aren't engaged by anything small enough. He was referring, of course, to the fact that reactions between waves and matter depend on having matter of the same physical size as the wave-length of the rays involved. The man who realized this was Max von Laue, a physicist at the University of Berlin.

Knowing that crystal structures, like those of salt and other compounds, have their atoms spaced together in regular order, very close together, von Laue assumed that passing x-rays through them would tell a good deal about the nature of the rays themselves. Knowledge of the structure of crystals had been obtained in various other ways, indirectly and through chemical interpretation.

He passed a beam of x-rays through a crystal of salt allowing it to impinge on a photographic plate. The plate showed a regular pattern of dark spots. From the order and regularity, von Laue realized that he had sort of a picture of the pattern of crystal structure. The atoms, regularly and closely space bent or diffracted the x-rays, giving a perfect picture of the architecture of the crystal. From the plate it was possible to calculate exactly the position and relation of the crystal atoms.

Sir William Bragg and his son varied the procedure somewhat. They shot the rays at the crystal at an angle, also using a photographic plate. They got similar results noting that reflection

occurred only when the beam struck the crystal at a certain angle. This combination of the techniques of Bragg and von Laue is called diffraction analysis and is of the utmost importance in modern physics.

For one thing we have learned more about the nature of crystals than was ever dreamed of. Most solid matter is crystalline in nature. And in practically all materials, the molecules are constructed in definite arrangements of atoms. The atoms may be in vibration but they maintain a definite relationship with each other. There is order, the order of a rigid architect in the individual molecule. The molecules in turn arrange themselves in a symmetrical way, forming crystalline structures out of which matter is made. Some substances like glass and rubber and plastic do not exhibit this crystalline structure.

This technique of x-ray diffraction is no longer merely a laboratory tool nor is it used purely in atomic research. Instead it has penetrated to the everyday workshops of the industries. The study of alloys, from aluminum to steel, is facilitated by x-ray diffraction. The strength of materials is largely determined by their crystal structure and the x-ray shows how.

In almost every case where the science has been applied, a great deal is learned. Studies of the fatigue of metals, studies of the nature of elasticity and rigidity, all are helped by x-ray diffraction analysis.

Modern x-ray diffraction machines are compact and efficient. Materials can be in the form of powders and large crystals. Large files of specimen photographs are maintained. Reference to them can show what should exist in say, a given type of alloy. When failures in plane members or bridge members occur such analysis points out the basic causes and suggests the remedies.

Conversely, x-ray diffraction analysis has helped in our understanding of x-rays themselves. Crystals are the perfect tool for that because of their regular structure.

The transistor, the crystal detector and a number of other crystalline gadgets which are coming to the fore in practical radio, are all being investigated with the help of diffraction analysis. Most of these things work—how?—we don't know—but with such techniques we'll eventually find out. And make them work still better. Why does a germanium crystal and a couple of wires act just like an amplifying vacuum tube? The x-ray diffractor will help give the answer. Yes, it's a far cry from the crystal ball to the diffractor!

* * *



SCIENTIFIC ODDITIES

By LYNN STANDISH

ROLL YOUR OWN!

TELEVISION is here, we're told! Grab your receiver and start receiving. Jump in and get on the hand-wagon. Become one of the *vidiots*. Spend your hours with a receiver of TV.

Fine and dandy. There is one catch though. For a lot of us, television is a little too costly. To get a set with a man-sized screen we have to lay out a nice roll of that green stuff, usually quite a bit more than we want to. True, a small set is technically fine, but almost everyone wants a big one. Is there any way out?

Yes, there is. A number of firms have come out with television sets with comparatively large picture tubes, for a reasonable price—and the way in which they can afford to do this is as clever as it's simple—they make *you* put it together. And you don't have to be a genius.

The television sets are sold in kit form. All that is necessary is to assemble them. Cabinets can be purchased extra.

If you reflect a moment you can see that this would permit a considerable saving for anyone who buys one. A great portion of the cost of the TV set is in the labor necessary to assemble it. It is a complex gadget with lots of soldered connections which take time and hand labor.

By selling you this kit, the manufacturers are able to forget this tremendous labor cost. The labor evolves on you.

Naturally anyone who hears about this for the first time shrugs his shoulders and laughs, "me? assemble a television set? I'm no genius!" And then he forgets about it.

But it's not nearly that bad. To begin with the sellers of these kits have packed with them lavish instructions, in the greatest detail, illuminated with photographs of the job in various stages so that veriest tyro can follow them. Furthermore all the sub-assemblies are completely put together, and all the delicate alignment has been done at the factory. The job boils down to nothing more than being able to read and to use a soldering iron—and this latter can be learned in ten minutes.

This is a practical system for housewives, school-girls, and many who didn't even know what a soldering iron was, have successfully built such sets. In addition, if the set fails to work, the manufacturer as a rule will point out where the possibility of error was greatest.

The quality of the sets is remarkable. If the set has been assembled according to instructions, it will operate just as effectively as a much more expensive assembled model. Some of the TV kits have been so utterly simplified that no knowledge whatsoever of radio parts is required. The instructions point out, "solder two inch wire to point 34K, other end to point 92J . . ." With such instructions, even an idiot could build a set.

Many people now have built these TV kits, ranging from electrical engineers to grade school boys—and all are eminently satisfied. It may take fifteen or twenty hours of work—or more, but in addition to saving yourself money, you have the satisfaction so elusive in definition, of accomplishing something concrete and constructive.

* * *

MICROBE HUNTER

PAUL DE KRUIF coined the expression "microbe hunter" to describe the bacteriologist. It is most apt. And the one whom it most fittingly describes is Antony Leeuwenhoek, the first of the bacterial researchers. For Leeuwenhoek was not a professional, but an amateur, one of the first of that vast number of "dilettantes" who have contributed so much to science.

Leeuwenhoek was born in the early part of the seventeenth century in the little town of Delft in the Netherlands. His youth and early manhood was spent as a dry goods clerk and a janitor. The interest in science and microscopy was purely that of an amateur.

Small magnifying glasses were used at the time by merchants who wished to examine the texture of the cloth they were buying. Leeuwenhoek became intrigued with these devices and soon he was grinding these same lenses. Gradually as he became more proficient he learned the technique of producing minute lenses which would give a surprising amount of magnification, even the principle of the modern compound microscope of two lenses was unknown to him.

With insatiable curiosity he turned his "microscopes" on everything at hand from bees' legs to rocks. Gradually his interest became quite scientific and soon he was turning out papers describing his work. The Royal Society of London heard of his work and started to publish his findings.

The discovery which was his greatest and which preserves his name as the first bacteriologist, was a simple one, as most great discoveries are. He

peered through a lens into a drop of stagnant rain water. He used the phrase "wretched heasties" to describe the host of minute animalcules and little living organism he found therein. The racing, teeming life astounded him and when he communicated this new discovery to the Royal Society, at first it was asstance. Two English scientists checked Leeuwenhoek's work. To everyone's astonishment it was shown he was right.

Unfortunately Leeuwenhoek was far in advance of his time. It wasn't until centuries later, until the day of Koch and Pasteur that the nature and significance of these bacteria were revealed. This is often the case. Leeuwenhoek's was one more example of a technology in advance of a society capable of either using or appreciating it.

The microscopes used by Leeuwenhoek consisted of a single lens set into a copper plate. Usually a small screw-stage was arranged to permit minute adjustment of the specimen's distance from the lens—accurate focusing in a phrase. The type of lens constructed by Leeuwenhoek was almost spherical giving great refraction and consequent magnification. It is possible to duplicate Leeuwenhoek's instrument by simply taking a thin sheet of copper, punching a very fine hole in it with a needle point and then touch a drop of water to the hole. This water-drop forms the lens and gives amazing magnifying strength. It is interesting to try and its simplicity makes it worthwhile. Of course such a lens is a far cry from the ones used in modern high-powered, color-corrected, spherical-distortion corrected microscopes. But it still teaches a great deal. Try it sometime!

* * *

SQUEEZE PLAY

IT IS a certainty that the engine of the future is not the reciprocating internal combustion type that powers most of our vehicles today. Eventually it is hoped that some sort of gas turbine or electric-type motor car engine will make its appearance. When, no one knows, but it is a good bet that it will happen sometime in the not too distant future.

So, meanwhile, we have to get along with the piston engine and see what can be done to improve it. In the last forty years of the development of the automobile engine we have seen it change considerably in detail though basically it is still the same machine. The primary improvement that has been a part of engine design outside of increasing the number of cylinders for smoothness in running, is the increase in compression ratio.

A good deal of the efficiency of the gasoline and Diesel engines lies in the way they compress their mixture of air and gas. In the engines of twenty years ago, the compression ratio was about four to one. Now it is about six or seven to one and General Motors has brought out a couple of new engines wherein it is eight to one. What does this mean?

"Compression ratio" refers to the ratio of the volume of the cylinder with the piston down to the volume of the cylinder with the piston up just when the mixture within it is ready to be ignited. The greater this ratio, the more efficient the engine.

The limiting factor in the use of high compression is the fact that if the compression ratio is very high, the conventional gas and air mixture will be ignited simply by the heat of compression, as in a Diesel engine, and the cylinder will fire before the piston has reached the top of its stroke, thus throwing the entire firing cycle of the engine out of time.

This "knocking" as it is termed is eliminated by holding the compression ratio to a value consistent with the fuel used. Special chemicals are put in the gasoline which prevent this pre-firing and as gasoline research continues fuels with higher octane ratings permit the use of high compression ratios. Manufacturers realizing that gasolines are improving in quality, are beginning to prepare by designing these higher compression engines which are so much more economical and efficient.

While this is a good thing, we would rather see a lot more work done on engines which hold still more promise such as the gas turbine—a type of which has been designed in Great Britain for automotive use—an electric motor type, or perhaps even a steam type. The latter offers a good many advantages. It is quite possible that if early automotive manufacturers had done more design work on the steam engine, it might have been the main power plant of our cars today. The real drawback to its use in the old days was the fact that it could not be started instantaneously but had to be warmed up gradually. With flash boilers, this fault is now overcome. In Europe, and even here, some such busses and cars, using steam motors, are being made. It remains to be seen whether or not they prove of practical value. Until then we'll have to stick with the conventional high compression steam engine.

* * *

SOAP BUBBLE UNIVERSE

OF ALL the startling scientific concepts which have in the last few decades assailed the mind of man, two are outstandingly impressive. One is the famous "expanding universe" of Lemaitre and the other "curved space" notion of Einstein. In their entirety both ideas are difficult to grasp, but by analogy it is possible to make sense of them.

Consider the idea of curved space. It is easy for us to visualize curvature in two dimensional spaces. We can imagine a plane which curved. In fact the surface of the earth is clear enough. The earth is a sphere and to a two-dimensional creature the earth is an example of a universe which is finite but unbounded. Yet we three-dimensional creatures know that the earth is simply

curved—a sphere. How difficult for a two-dimensional person to grasp!

Now we must do something similar. Our universe we are told is made up of curved space. What is three dimensional curved space? Twist yourself into an imaginary fourth dimensional mind and try to imagine it. Obviously you can't construct a physical model. Therefore we can only accept the statement. It is a try, anyway.

The idea of an expanding universe is considerably easier to imagine. We can draw the simple analogy of a balloon on which dots are painted. As the balloon is blown up the dots rush away from each other. Similarly we believe the stars are rushing from us. We can't read velocities directly, but we can interpret it indirectly by means of the famous "red shift."

When stars are observed through a spectrograph, a shifting of the light toward the red end of spectrum is noted. This is a consequence of the Doppler effect which involves an increase in wave length of a wave which is receding from us.

Since we observe the red shift, automatically we must conclude the stars are escaping from us. Thus we say the universe is expanding. By no means is this acceptable to all scientists. Some contend that it is alternately expanding and contracting in an effort to reach a state of equilibrium.

The idea of an alternately expanding and contracting universe offers a profound contradiction to one of the pet theories of Sir Arthur Eddington. He believed along with Jeans and with other cosmologists, that the universe was running down, that the amount of "entropy" (randomness—disorganization) was increasing and that eventually, like a run-down clock, the universe would come to a common level. This is in strict accordance with the laws of thermodynamics which predict such an event and from which Eddington drew much of his strong belief.

Naturally our time-scale is too short to permit us to make any judgments as yet. A great deal of data of a vastly more conclusive nature will have to be assembled before we can say definitely what is happening. But speculation is the life blood of interest, even in science.

* * *

MECHANICAL CHESS PLAYER

THAT new science, Cybernetics, the subject of human and mechanical nervous systems gives rise to some interesting speculation. Dr. Norbert Wiener, the originator of the subject closes his famous book on Cybernetics with a discussion of interest to anyone who is interested in robots.

Dr. Wiener maintains, that, with the technical knowledge now at our command, it is perfectly feasible to build a machine which can play chess! Edgar Allan Poe once wrote a story of a mechanical chess player, but the end of the story tells us that it was a hoax; a midget was concealed within the facade of the machine and he moved

the arms and chess pieces through a series of levers.

The machine, however, about which we're talking, is a true mechanical, robotic chess player. It is constructed of electron tubes, relays and complex electrical circuits connecting servomotors to actuate the controls making the movements of the chess pieces.

Do not picture this hypothetical machine as looking like the traditional picture of a mechanical man. Probably, if it was ever built, it would look more like a metal box—and that's all.

Dr. Wiener says that such a machine could play chess very well. It would never be able to beat a really good chess player, but it would give an ordinarily good chess player a run for his money, and it would positively beat a poor or careless player, every time.

The way in which the machine operates is this: built in it is the capability of recognizing the necessity for playing two or three moves ahead of the opponent. You can imagine what a complex job this would be to make such a mechanism for it would involve circuits much like those in an automatic telephone exchange.

It is a tribute indeed to human ingenuity to even think that such a machine can be built. Someday, simply for accomplishment's sake, we'd like to see it done. Undoubtedly some scientist-hobbyist will make a try at it.

* * *

FIRST ECLIPSE

ANCIENT peoples have been terrified by eclipses, but a fairly accurate record of them has been kept. The Babylonians preserved a long detailed record of them which has helped historians tremendously in fixing dates and times more exactly. When an historical event is stated to coincide with an observed eclipse, it is easily possible for an astronomer to reckon backwards and find whether or not the date given is either possible or true.

The oldest known record of an eclipse is given in ancient Chinese annals. This eclipse dates back to two thousand years before Christ!

Two hereditary astronomers, Hsi and Ho, as described in the Shu King, the Book of Historical Matters, forgot their duties and spent their time having a wild time carousing and drinking in their respective cities.

The Chinese king, Chung Kang, sent an emissary, the Count of Yin, equipped with a punitive army to set them aright. The count addressed his troops saying that "Ho and Hsi did not know that the moon and the sun did not harmonize in Fang," a statement which may be interpreted to mean that the count was to punish the errant astronomers, because they failed to observe and predict the eclipse. Modern astronomers, checking this account, maintain that this eclipse occurred about nineteen fifty-two B. C.

The story of the eclipse of March 1, 1504 is

well known. It was the one which saved Columbus' life when threatened by Jamaican natives. Columbus used the time-honored technique of threatening the natives with blotting out the moon unless food was made available. This they did when they saw it vanish.

Eclipses in modern times are phenomena of great value to the astronomer. And in certain cases the physicist needs them too. The most famous example of this, is the nineteen-nineteen eclipse, which was used to determine one of the proofs of Einstein's theory. An eclipse of the sun was necessary in order to permit stars visible along the rim of the sun to be observed. Because the moon blotted out the intense sunlight this was possible. Consequently slight angular displacements of certain stars were observed, observations which coincided exactly with Einstein's predictions and which were of great value in showing the truth of that rather abstract theory.

The bending of light near a heavy gravitational body was thus shown, without question, to be true.

It is interesting to note that the fewest eclipses that can occur in one year or two, are both of those of the sun. The greatest number is seven, of which five are of the sun and two of the moon, or on occasion, four of the sun and three of the moon. The average is about four eclipses per year.

Scientists are looking forward to making rocket observations of eclipses with automatic instruments mounted in the nose of the sleek craft. Again, because the intervening layer of air is lacking, more information should be obtained.

* * *

BRAINS VERSUS MACHINES

THERE is a hue and cry in our country today which is becoming louder. Soon it will be heard wherever men think, in the shops, in the labs, in the schools. Some of the technical journals and educational magazines are already taking up the call.

It is a simple voice. It doesn't say a great deal—in words, that is—but it means a lot. What it says, is this—"give us scientists—not technicians!"

A prominent American physicist has pointed out a trend that seems to be taking place in this country and in the rest of the world. Because applied science has made such spectacular gains and has shoved the scientific man into prominence with the atomic bomb, with radar, with super-sonics, with rockets, a tremendous respect exists for applied science.

Consequently, the laboratories and the schools are crammed with men studying to take their places in the huge industries that have sprung up. Unfortunately, the fascinating and spectacular subject of physics has surrounded itself with so much money, with such huge laboratories, that it has given the impression that money and labs are the only requirements for scientific work. That does not happen to be true.

Again, unfortunately, those laboratories which can offer the most money or the most elaborate equipment, tend to attract the best talent, yet the circumstances which they provide are not necessarily the most conducive to productive thought.

It is a fundamental fact that most of the truly great, profound discoveries in modern physics have not been made in huge laboratories. They have been made by men, thinking and working in an atmosphere which stimulates productivity.

The groundwork for the atomic bomb was laid by the theoreticians like Planck, Einstein, Bohr, Schroedinger, De Broglie, Heisenberg and others of the same calibre—brilliant men.

At present it appears as if the world is still producing their kind. Of course, they are not alive, but a new generation does not seem to be springing up to fill their shoes when they eventually go.

This terrible tendency is now being recognized and deplored by responsible men who are taking some steps to counteract it. Thus the Institute for Advanced Study at Princeton provides a partial answer, something equivalent roughly to the pre-war University of Göttingen, or the British school at Cambridge. Teachers and educators are urging qualified young men to work in physics—and since we are just about due to start some more theoretical advancements—they are suggesting that theoretical physics, highly mathematical, needs some recruits.

And in some universities this need is being felt. Around the theoretical leaders, like Oppenheimer and men of his ability, small nuclei of skilled scholars are forming, to take their places eventually as leaders of the new physics that is to be. Science is an attitude—it does not necessarily mean a beautiful laboratory is required on every block.

Brains are at a premium. A mind can do a lot more than any hundred million volt cyclotron or synchrotron. "Perchance to dream—aye, there's the rub."

* * *

RADIOACTIVE FLOAT

SOMETIMES the simplest things are the hardest—like getting out of bed in the morning—or, in what is important—measuring liquid level. This little problem is a nasty one. As easy as it appears on the surface, so difficult is it. Many types of gauges have been designed to show the volume of liquid in a tank. Usually these depend upon some sort of a float connected to a lever indicating arrangement. Sometimes, as in an automobile gas tank, the transmission of the level may be electrical, sometimes, as in an oil tank for the home, it may be mechanical. Neither of these two methods is very satisfactory.

But this is the atomic age! Naturally somebody had to come along and design an atomic liquid level gauge! And the marvelous part of it is the

fact, that it can be used in almost any kind of tank filled with any kind of liquid from water to sulfuric acid.

A little glass float is filled with a small quantity of radioactive material, and attached to a vertical rod within the tank so that it can move freely up and down. Outside the tank and above the float is a Geiger counter sensitive to the radiations from the float. Obviously the lower the liquid level the less the intensity of the radiation. Thus the gauge can be easily calibrated to read whatever is necessary, and in the appropriate units.

It is simple ideas like this which help a lot. Often the simplest ideas are the most important ones.

* * *

MOVIE GEOLOGY

WHILE the famous film "Fantasia" as worked out by Walt Disney, was noted primarily for its beautiful musical treatment, several of the cartoonist's sequences were great art and great science. The section devoted to the development of the Earth, to its creation, to the existence of the monstrous reptiles, was one of the finest parts. This part would make an excellent introduction to the subject of geology for students.

It is almost impossible to believe, when we examine the cultivated, smooth, grass and forest-covered surface of our beautiful planet, that it was once an entirely different picture. When the vast molten-semi-gaseous sphere which was the Earth, began to cool, the iron core solidified first, followed by outer layers of mixtures of other elements plus iron and then finally by the "waste matter," this last forming the relatively thin "crust" which constitutes that part of the Earth which we know best.

The complex confusion which took place as this outer crust solidified was magnificently illustrated in "Fantasia." The violent, boiling upheavals of molten rock, the furious streams of all-consuming lava, and the bitter ghastly blasts of gas made a storm so incredible that even now our minds are stunned by the picture. As more and more radiant energy was poured into space, the crust cooled a bit more until the gases, mainly steam which composed the outer gaseous envelope, condensed to form the oceans after being evaporated a billion times by the terribly hot rock. Powerful acids were formed which leached out the rock formations further. Meteors poured down from the sky in profusion in much greater quantities than now. Gradually the Earth cooled sufficiently to permit the oceans to assume shape without evaporating.

It is believed that the oceans at that time formed a complete surface, that they entirely blanketed the Earth. Thus to an outsider the Earth would appear as a smooth ball of water over which clouds hovered.

However the crust beneath the waters was going through vast convulsions of its own. Portions were rising and sinking. Here and there the crust would split. Eventually as time went on the oceans were pierced by thrusting fingers of rock which were to be the continents. Gradually enough land thrust itself up and the waters sank enough to permit sort of continents changed from the present, to form. But all the while changes went on.

While some have believed in the past that the ocean beds were formed by the Moon being torn from the Earth, this is not believed today. The Moon-Earth separation occurred much earlier, when the whole Earth was still molten and gaseous.

"Fantasia" showed very well the picture of the forming Earth including the rise of life in the form of the great saurian creatures, the lizards and dinosaurs. If anyone desires an excellent renewal of his knowledge of geological principles he should take another look at this splendid film.

* * *

TEASING MATHEMATICS

THE great French mathematician Fermat, has left us a sentence which has teased and tantalized mathematicians ever since it was first written back in 1621. But before we discuss the sentence, let us go back to elementary mathematics.

Every schoolboy remembers what is often called the "Egyptian triangle," that is, the right triangle whose sides are three, four and five. We know that this right triangle is a specific case of the algebraic formula, three squared plus four squared equals five squared, and that in turn is a specific case of the more general formula, a squared plus b squared equals c squared.

A whole table of values can be calculated for these various squares easily. Mathematicians, however, wondered for a long time whether or not there was a similar relationship for cubes or higher powers. They suspected that there was not. Of course we are speaking in terms of integers or whole numbers.

In fact, if you take a pencil and paper and try to work out a relationship like three cubed plus four cubed equals x cubed you will find that x is not an integer. If you work with other numbers, or with higher powers than the cube, you will still find that you can't discover such numbers.

Anyhow, mathematicians tried for a long time to prove that this fact was true, but without success. It can be proved for certain numbers—but not all, but not all is not enough. A mathematical proof requires proof for all.

In sixteen twenty-one, Pierre Fermat, a very great French mathematician bought a copy of a book by Diophantes in which this problem was discussed.

Then he made a note in the margin alongside the equation, "x to the nth plus y to the nth equals z to the nth, has no solution if n is higher

than two! I have discovered a wonderful proof of this, which this margin is too narrow to hold!"

When this note was discovered, mathematicians tore out their hair. For three centuries the best mathematicians in the world have been trying to rediscover this "lost proof" and without success.

It is believed that Fermat now either had not discovered a proof or made a mistake in it, but for a long time, it was thought he really had such a proof. Before the first world war, there was a standing offer of about twenty thousand dollars to anyone who could prove this—it was offered by a German mathematical society and, of course, due to inflation, the prize later became worthless. It made no difference because it was not likely to have ever been collected anyway.

Regardless of what mathematicians suspect, there is always the possibility that the idea may be proven wrong and that certain such integers may exist. Nevertheless the search is pretty hard—especially since you have to work now with exponents larger than two hundred and sixty-nine—the rest having already been tried.

* * *

EGG-EATING SNAKE

THIS reptile, found in tropical and southern Africa, feeds exclusively upon birds' eggs and even domestic hens' eggs. It climbs among the tree branches robbing nests. The egg-eating snake is quite small, less than two feet long and no bigger around than your finger. But in spite of its size it is able to eat a hen's egg without cracking the shell. When it begins to eat, it places its mouth against one end of the egg and begins to push itself forward till its mouth has surrounded it. The upper and lower jaw becomes disconnected as well as the lower halves which separate at the chin. As the snake has such small teeth and only on the lower jaw, it is able to take the egg into its mouth without breaking the shell. But, of course, the nourishment lies within and it must be broken if the snake is to derive any benefit from its meal. This is accomplished by "throat teeth" which are really projections of the vertebrae that pierce the upper wall of the reptile's gullet.

When the egg reaches these teeth which are located as far as twelve inches back, depending on the size of the snake, the egg-eater contracts certain muscles that break the shell. In this way, none of the egg is wasted, as it might well be if the egg were broken in the mouth. After the egg is secured, the shell is ejected in the form of a pellet.

Someone remarked that snakes have more faith in eggs than humans, but it is not necessarily the case, for the egg-eating snake is endowed with a very keen sense of smell, and refuses to feed on eggs that do not "smell strictly fresh." One rather stupid snake was deluded into eating a china nest egg, much to its later disgust and indigestion.



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By LEE
OWENS

OBSOLETE OR MODERN?

A TERRIFIC verbal battle—as yet, verbal, that is—is raging in the War Department, which is battling with the Navy, Army and Air Force Departments over the apparently vital question as to whether or not it is a wise idea to construct the huge aircraft carrier that the Navy is demanding.

Our government is thinking in terms of the possibility of another war, and consequently is trying to consider all the eventualities which might exist.

As everyone of sense believes, this hypothetical war is going to be one in which guided missiles, rockets, atomic bombs, bacterial warfare, radio-active-sowing and the other horrible new techniques, are going to be used. Yet, we find many military and naval officers still thinking in terms of the last war.

Those proponents of the gigantic super aircraft carrier are really talking foolishly. The day of big naval vessels is completely over. Think of their vulnerability to attacks, not only by planes, but guided missiles such as rockets carrying atomic bombs. It is the height of futility to imagine that any vessel is going to be able to avoid or repel attacks of this sort, no matter how well defended nor how heavily protected.

Consequently, it is the fond hope of many men concerned with the national defense of this country, to see that vast sums of money, as well as priceless materials and skills, are not wasted in foolish diddling with obsolete equipment, no matter how cleverly the need for that equipment is stated.

Just as the spear-carrier is an outmoded type of soldier who has outlived his usefulness, so an aircraft carrier can no longer perform any function which can't be better performed by land-based rockets or aircraft.

Fortunately, it is to our advantage that many men of discernment have their hands on the controls of national security. They will see that the United States has the best of everything it needs for the prosecution of warfare against any enemy. We are certain that this will not include useless, hulking, outmoded aircraft carriers!

* * *

THE USE OF REPTILES

SNAKES feed upon rats and mice and other destructive rodents. A half-grown python will eat about 250 rats a year. Snakes also yield a small amount of oil, and their skin is used in making shoes, purses, and belts. The hide is beautifully marked and takes the dye easily.

It is not generally known that the venom of snakes has for long been used for medicinal purposes. For instance, rattlesnake poison is used in the treatment of yellow fever, and that of the Indian cobra is used for some heart diseases. Bushmaster venom is used against diphtheria, and a very weak solution of the coral snake's poison is used as a remedy for deafness.

Since early times, the common viper, or adder, was regarded as a means of curing many diseases. The flesh was hoiled and fed to the patient, and sometimes it was given in a powdered form. If this was not palatable, it was recommended that he should place it in slightly warmed wine for two or three days. Many remarkable cures have been attributed to the use of viper oil. One man near death from quinsy, had his throat massaged with some of the oil and was cured, and many valuable cattle have been saved in this manner.

The Chinese have a way of making "snake wine" by placing a live rattlesnake in a bowl containing rice wine. The more the snake strikes the walls of the dish and the longer it lives while submerged in the fluid, the stronger the wine becomes. When a person drinks this wine, he becomes very ferocious and dangerous.

There is an interesting connection between the Æsculapian snake and hospitals. The snake which was thought to be gifted with the ability to discover medicinal herbs, received its name from Æsculapius, son of Apollo, and the nymph Coronis, and was worshipped as a god. He was supposed to have appeared on several occasions in the form of a serpent, and his temples, where many snakes were kept and tamed, were the forerunners of our present-day hospitals. To this day the symbol of a snake appears on the badge of the Royal Army Medical Corps.

* * *

THE MISSING LINK

THE question often arises as to what constitutes the dividing line between life and non-life. What is the essential distinguishing quality about living things?

If you analyze the answer to the above question closely, you arrive at the belief that living matter as distinguished from inorganic matter is determined by the fact that living matter is capable of assimilating nutriment from its surrounding medium using this nutriment to further its own growth.

Accepting this definition leads to somewhat of a problem though. That answer sounds good enough for a biologist, but a chemist will say, I can show you something in the way of crystals which follow your definition—yet, you wouldn't say they were alive. For example, how about the growth of salt crystals in a saturated solution of sodium chloride?

At this point the biologist is stumped for he knows that what the chemist says is true—a salt crystal gradually enlarges at the expense of the surrounding liquid, just as a living cell grows by taking in food from its medium.

Nevertheless, a little thought will make it clear that there are some other qualities possessed by living matter—thus, the growth and splitting of crystals under their own weight does not bear much resemblance to the actual realities of cell fission.

It seems to be best to say, that there is no exact definition to separate living and non-living matter—there is, rather, a shading of one into another.

There is a "link," a median-stage between living and non-living matter which is well known. This is the famed "virus"—both the filterable type and the non-filterable. The classification "filterable and non-filterable" refers to the ability of the virus to pass or not to pass through a ceramic filter of low porosity.

A virus is a molecule, a complex chemical molecule, made up of hundreds of thousands of atoms. Since a virus can be so clearly expressed in terms of chemical formulae, it might be tempting to classify it as non-living matter, but—and it's a big but—the virus is able to do something quite mysterious, something which we normally attribute only to living matter. It is able to change its surrounding medium to forms identical to itself—a re-creation so to speak, thus behaving as living matter.

Therefore, no matter how you look at it, it must be agreed definitely, that viruses are *both* living and non-living substances. Viruses are a broadening of our strict definition.

Viruses then constitute our border-line case. On one hand we have the non-life of chemical compounds; on the other hand, the life of chemical compounds. It seems part of a conspiracy on Nature's part to continually force us to hedge

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one way or the other without clearing things for us. It's a lot like the Uncertainty Principle of Heisenberg in physics, which prevents us from knowing both the location and the velocity of an electron exactly. You can know either one or the other—but not both. "You pays your money and you takes your choice!"

SIGHT SUBSTITUTE

OF COURSE the very title of this article is wrong; there can be no substitute for sight. Nothing can ever replace it. It is probably the most valuable single faculty of the human body. Only a blind man can appreciate the true value of the ability to see which most of us take so freely for granted.

But science, knowing that it can never replace the eye, even though it has been partially successful with corneal grafts, has been working on some machines which can help alleviate the agony of blindness. Primarily these machines are for helping the blind to read. Amazing Stories has already reported on one of them, a gadget designed to scan ordinary type and by means of photo-cells and amplifiers, to produce coded signals which the blind man can recognize with some practice as letters.

This is a much improved step from the use of elementary Braille which is difficult to learn and which is comparatively unsatisfactory since it relies on the sense of touch.

Dr. Vannever Bush of World War II fame has been greatly concerned with prosthetic devices and with what he calls "sensory" equipment. This sensory equipment refers to thoroughly developed hearing aids for the deaf—and above all, to equipment for helping the blind.

Electronics is at the heart of this sensory equipment. As has been mentioned before, suitable electronic devices can do a fair job of substituting for the human senses, although they can never completely replace them. However, it is better than nothing. And it works to a great extent.

The new machine, a fine piece of sensory equipment, also consists of a photo-electric scanning head. This little scanning head is mounted in a rack which is placed over the pages of an ordinary book which the blind person wishes to read. The head then moves from left to right and from top to bottom, covering each letter and each line of type of a single page. The photo-electric scanner translates each letter into a different electrical impulse.

Connected to the scanner is an amplifier and a sound-emitting unit. When the impulse strikes the sound-emitting unit, it sets into motion a circular magnetic recorder which feeds the loudspeaker with the sound of the letter being "read" by the scanner so that the machine sounds like this: "are—oh—you—enn—dee" for the word "round."

This is an enormous step forward, for it spells out the words letter by letter and obviously requires no previous training on the part of the reader other than the learned ability to read, which it is assumed that person has had in the past. It is much better than Braille or learning a code. It is only a matter of time before it is going to be possible for such a scanner to pronounce words. When that day comes, the blind person will put the book in a machine, and the machine will actually "read" the book aloud, even as a human being does! Astounding as that sounds, it is well within the realm of possibility, and it is a likelihood, that even as this is being written, we will learn of the new machine. Let us hope so. Man can never duplicate the human senses with his machines, but he can do much to make the life of any handicapped person a lot less arduous.

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BETWEEN AND BETWIXT

IT IS a curious but definite scientific fact that Man stands midway between the largest and the smallest things. This observation was made by Harlow Shapley, the astronomer, and others before and after him have done the same. It is particularly interesting to consider what this means, though it is by no means new.

Man in size is midway between the atom and the stars. What a vantage point this gives him! It is almost as if nature had intended this for us. It is clear to see that into the depths of space our telescopes provide the necessary tool.

On the other hand the microscope, and more recently, the electron microscope, offer the path

into the world of the invisible. The two tools, microscope and telescope, cover the entire gamut of the world we wish to probe.

The speculation that is most startling and one which has been proffered by a few observers, is that our universe is really an atom of the super-universe! Is this possible? From our present standpoint it is not possible to say. Unless we develop new tools, a definite answer to this question is out of reason to expect. But the odds are against it. If such were the case, we should have some inkling—as yet there is none. We like to think, and reasonably so, that we are the sole measure of the universe.

THE HEAVENLY OBOIST

THE music of the spheres may not be just such a poetic expression after all. Perhaps it is founded in fact. Consider the famous case of Sir William Herschel.

Herschel was one of the many Germans who fled the military (compulsory) service of his country, settled elsewhere and made a name for himself. When he was a mere seventeen William, who exhibited musical talent, was enrolled in the Royal Hanoverian Guards as an oboist. For two years he tooted away until the oppressive discipline frazzled his nerves and discipline in the armies of the eighteenth century was no laughing matter.

Herschel fled to England where he worked as a bandmaster and an instructor in music. His hobbies however began to consume more and more of his time. Mathematics, astronomy, physics—especially optics—fascinated him. He began to work on his own telescope—one of the first amateurs of note—and with the aid of his devoted sister, he eventually became a mirror maker of the first caliber. Finally he constructed a huge telescope, a reflector whose size and quality were superior to anything yet made.

Not content with merely making the 'scope, he started on a job which makes the cleaning of the Augean stables, mere child's play—he decided to make a complete catalog of the heavens! In the process of surveying the sky, section by section, Herschel found a faint blur of light which because of its gradual motion, he knew couldn't be a star. At first he assumed it to be a comet, but gradually after re-observing and calculating he learned it was a new planet—the planet Uranus. This assured Herschel's fame. Thereafter the oboist became the Royal telescope maker by appointment to the king as they say.

He is remembered even today, not alone for his monumental catalog of the heavens, nor his large telescope, but for some of the fine mirrors he ground and silvered—astronomical mirrors of course. He went so far as to preserve some by sealing them in cans. Recently a number of these telescope mirrors were discovered. When removed from their containers, resilvered and tested they proved to be of amazing quality, showing that real skill is truly timeless.

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THE COSMIC JOKE

★ By Jon Barry ★

USUALLY one doesn't connect humor with astronomy, but in the case of a certain search it plays its part. At the beginning of the nineteenth century there was a director of a German observatory at Gotha. He was extremely interested in an astronomical law known as "Bode's Law." This rule has to do with the relationship of the distances of the planets from the Sun. When Bode's Law was applied by the director, Baron Franz von Zach, a strange discrepancy was noted.

A planet should exist between the orbits of Mars and Jupiter. But diligent astronomical searching failed to show any such planet. Humorously, von Zach organized a group of astronomers into what he referred to as "astronomical police" whose detective duties were to consist of tracking down the missing planet.

For a full year the search went on without success. Then finally an Italian astronomer in Palermo, Sicily, discovered in the Jupiter-Mars gap, a small planetoidal body, which he named "Ceres" after the goddess of farming. The startling thing was the minute size of the planetoid which later was called an asteroid. It was only about four hundred and eighty miles in diameter.

More surprises were to come. As astronomers searched they found more and more of these tiny asteroids, all of them smaller than Ceres, some even as small as ten miles in diameter.

As research went on, more and more were found. At present more than a thousand are known, and undoubtedly many tens of thousands still remain to be found but are too small to be seen with present telescopes.

The question then comes up. What are asteroids. The best guess seems to be that they are the fragments of a planet. Sometime, somehow, a large planet existed in the gap between Jupiter and Mars. What sort of a dreadful catastrophe occurred we can only guess at, but whatever it was, it shattered the planet into a million fragments and strewn them out between the Jovian and Martian orbits.

It has been suggested that perhaps the inhabitants of this conceivable planet may have been the possessors of atomic energy and through the mis-use of it, shattered their home into nothingness. This may eventually be found to be a legitimate hypothesis. We shall have to wait for the development of rockets when we may examine the fragments at first hand and discern whether or not the theory is tenable.

It may, in a humorously macabre way, be a warning, a sort of cosmic joke on mankind, a grim warning that this is the result of tampering with atomic and nuclear forces unrestrained by moral law.

For, if man goes on as he is, determined to use the products of science to destroy his fellow man, sometime in the future astronomers of another planet may wonder at the gap between the orbits of Mars and Venus. They may speculate on the fragments that fill that space. "Yes," they'll say, "that was once a planet—and now it is nothing but a mass of flotsam in space."

FLYING STOVEPIPES



By L. A. Burt



MODERN aviation is willing to try anything. In this age in which speed and more speed is paramount, anything that will get that speed is willingly given a chance. It is understood that nothing can compare with a rocket for speed, but because of its enormous fuel consumption, designers are willing to settle for more prosaic methods of propulsion, for example jets, and ramjets.

The ramjet is essentially nothing more than an improved version of the German V-1. It is a tube, open at both ends. When driven at sufficient speed through the air, air rushes through it. Fuel is injected into this stream of air and ignited by a spark; from then on the reaction is self-perpetuating and the amount of thrust developed is terrific. Recently the Air Force attached a pair of these ramjets to a conventional jet plane and sent it hurtling through the air driven by a pilot. The jet took off under its own power and when adequate speed had been obtained the ramjets were cut in and the regular operational jet cut out.

This was the first time that man rode the ramjet and it must have been quite a thrill. Unlike the conventional jets there are no moving parts in the ramjet. The air piling up in front acts as its own compressor and all that escapes from the rear is a roaring blast of tremendous thrust. Primarily this development is intended for future warfare.

TWO WAY STRETCH



By A. Morris



THE government is going into the "two-way stretch" business. The Bureau of Standards has recently announced a clever and ingenious device for measuring slight forces or slight displacements. And like all good ideas, it is simple. It is nothing more than a spring, so wound that it stretches unevenly, more at one end than the other. As a result when a force is applied to it more turns of the spring are extended at one end than at the other.

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straight wire—very high. A meter connected in the circuit can readily show these changes.

The set-up is reminiscent of a gadget reported in these pages some time ago. The resistance of an electrical wire varies with, among other things, the temperature. Some wires have this property to an exaggerated degree. The result is fine. Minute variations in temperature can then be detected by measuring the resistance of the wire, or what is effectively the same thing, by passing a current through it and measuring its magnitude.

Such a device used in a thermostat is much simpler than the conventional one for it has no moving parts. Undoubtedly time will see it widely applied even to the household.

Several times the question has been asked, "why report these industrial developments in a science-fiction magazine?" The answer to that one is easy.

Science-fiction is the science of tomorrow. Science is the fiction of yesterday. This magazine is fully aware, extremely aware, sensitively aware of a big occurrence that will take place in the very near future. It is a known fact that within a very few years a rocket is going to head moonwards. The editors of this magazine await that

day with a mingled mixture of "we told you so" and "thank God, it's here at last." They also know that any such rocket which is certainly being developed now, is going to employ many of the devices which are pouring forth from laboratories here on Earth. Therefore we feel it our duty to keep our readers abreast of these advances. For a certainty many will be used.

It is interesting to note in connection with the idea of moon-rockets and projectiles, that a government authority let the cat out of the bag the other day. He made a remark to the effect that he was interested in examining the budget allotted to the government project, no, blank, blank, etc., which is concerned with a satellite station!

S-f fans here have shuddered with delight at the knowledge that at least we know that our government is on the ball, enough so to assign project numbers and money to such developments which, a mere ten years ago would have appeared straight out of the pages of Amazing Stories.

You can depend on this magazine to keep you thoroughly informed on any advances which will further that forthcoming art and science—interplanetary communication and travel!

HUMAN SERVOMECHANISM

By Sandy Miller

A SERVOMECHANISM is a controlling device for regulating anything from oil furnaces to antiaircraft guns. It has one difference from a simple regulator—it is a closed system. Thus, your oil burner is really a servomechanism because the thermostat sends a signal to the burner to go on, which in turn heats the room in which the thermostat is located, which then tells the thermostat to modify its signal to off. This closed cycle of events in automatic machinery is duplicated in the human body. We are a hundle of servomechanisms.

Thus when we pick up a pencil, our brain has sent a signal to our nerves which have activated our muscles and set our hand into operation.

But there is some subtle nervous reaction capable of determining the distance between our hand and the pencil and which tells our muscles to slow down—"the pencil is here!"

This principle of feedback exists in humans even as in the automatic machines designed by humans. The comparison of human servos with machines is giving rise to the science called Cybernetics by the mathematician Norbert Wiener. We can expect to hear and read a lot more about servos in both the human and the mechanical aspects, because as technology grows more complicated, this subject grows more important. It is the heart of the automatic factory which is well on its way to reality!

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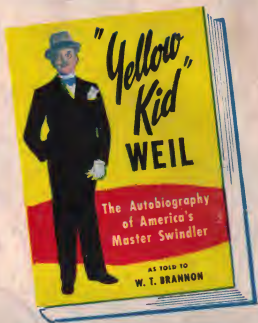
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